




Prüfbericht-Nr.: <i>Test report no.:</i>	CN25D2HQ 002	Auftrags-Nr.: <i>Order no.:</i>	168549449	Seite 1 von 27 Page 1 of 27
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2025-04-15	
Auftraggeber: <i>Client:</i>	Lumi United Technology Co., Ltd. Room 801-804, Building 1, Chongwen Park, Nanshan iPark, No. 3370, Liuxian Avenue, Fuguang Community, Taoyuan Residential District, Nanshan District, Shenzhen, China			
Prüfgegenstand: <i>Test item:</i>	Smart Lock U400			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	DL-D06E, DL-D16E, DL-D06D, DL-D16D, DL-D17D, DL-D15D			
Auftrags-Inhalt: <i>Order content:</i>	Test Report			
Prüfgrundlage: <i>Test specification:</i>	EN 300 328 V2.2.2 EN 62479:2010			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2025-04-21			
Prüfmuster-Nr.: <i>Test sample no.:</i>	A003967556-004~005 A003968627-001			
Prüfzeitraum: <i>Testing period:</i>	2025-04-24 - 2025-04-30			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	 Lin Lin		genehmigt von: <i>authorized by:</i>	 Andy Yan
Datum: <i>Date:</i>	2025-06-12		Ausstellungsdatum: <i>Issue date:</i>	2025-06-12
Stellung / Position:	Sachverständige(r)/Expert		Stellung / Position:	Sachverständige(r)/Expert
Sonstiges / <i>Other:</i>	This report is for Radio Spectrum and Health of Bluetooth & Thread requirements.			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

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Anmerkungen
Remarks

1	<p>Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben.</p> <p>Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden.</p> <p><i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i></p>
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3	<p>Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben.</p> <p>Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt.</p> <p><i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i></p> <p><i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i></p>
4	<p>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2023, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</p> <p><i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2023, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i></p>

Test Summary

5.1.1 RF OUTPUT POWER

RESULT: Pass

5.1.2 POWER SPECTRAL DENSITY

RESULT: Pass

5.1.3 DUTY CYCLE, TX-SEQUENCE, TX-GAP

RESULT: Not applicable

5.1.4 MEDIUM UTILISATION (MU) FACTOR

RESULT: Not applicable

5.1.5 ADAPTIVITY

RESULT: Not applicable

5.1.6 OCCUPIED CHANNEL BANDWIDTH

RESULT: Pass

5.1.7 TRANSMITTER UNWANTED EMISSIONS IN THE OOB DOMAIN

RESULT: Pass

5.1.8 TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

RESULT: Pass

5.2.1 RECEIVER SPURIOUS EMISSIONS

RESULT: Pass

5.2.2 RECEIVER BLOCKING

RESULT: Pass

5.2.3 GEO-LOCATION CAPABILITY

RESULT: Not applicable

6.1.1 ELECTROMAGNETIC FIELDS

RESULT: Pass

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1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of Bluetooth LE.

Appendix B: Test Results of Thread.

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

2-3F, 101 & 102, No.2, Nuclear Power Industrial Park, Fuming Community, Fucheng Street, Longhua District, Shenzhen 518000, China

CNAS Registration No.: L3080

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radio Spectrum Testing (TS8997)					
Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. until
Wireless Connectivity Tester	R&S	CMW270	101375	2024-09-26	2025-09-25
Signal Analyzer	R&S	FSV 40	101441	2024-09-26	2025-09-25
Vector Signal Generator	R&S	SMBV100A	263301	2024-09-26	2025-09-25
Signal Generator	R&S	SMB100A	115186	2024-09-26	2025-09-25
OSP	R&S	OSP 150	101017	2024-10-31	2025-10-30
Control PC	DELL	OptiPlex 7050	FTJZ9P2	N/A	N/A
Test Software	R&S	WMS32 (V11.00.00)	N/A	N/A	N/A
Power Meter	R&S	NRP2	107105	2024-10-31	2025-10-30
Wideband Power Sensor	R&S	NRP-Z81	105677	2024-09-26	2025-09-25
High Low Temperature Test Chamber	KOWINTEST	TH-30FJX	KW-21040497	2024-09-26	2025-09-25
Shielding Room	Albatross	SR1	APC17151-SR1	2024-09-14	2027-09-13
Unwanted Emission Testing (TS8996)					
Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. until
Signal Generator	R&S	SMB100A	180840	2024-09-29	2025-09-28
Wideband Radio Communication Tester	R&S	CMW500	165339	2024-09-29	2025-09-28
Signal Analyzer	R&S	FSV 40	101440	2024-09-29	2025-09-28
System Controller Interface	R&S	SCI-100	S10010036	N/A	N/A
OSP	R&S	OSP 120	102041	N/A	N/A
OSP	R&S	OSP 150	101385	2024-10-29	2025-10-28
Pre-amplifier	R&S	SCU08F1	08320030	2024-09-29	2025-09-28
Amplifier	R&S	SCU-18F	180079	2024-09-29	2025-09-28
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	192	2024-10-07	2026-10-06

Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218719	2024-10-07	2026-10-06
Wideband Ridged Horn Antenna (12-18 GHz)	Steatite	QMS-00208	18312	2024-10-07	2026-10-06
Biconical Broadband Antenna (30 MHz - 1 GHz)	Schwarzbeck	VUBA 9117	357	2024-10-07	2026-10-06
Double Ridged Broadband Horn Antenna (1 -18 GHz)	Schwarzbeck	BBHA 9120 D	01760	2024-10-07	2026-10-06
Test software	R&S	EMC32 (V10.50.40)	N/A	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NW9P2	N/A	N/A
3m Fully Anechoic Chamber	Albatross	FAC-3m	APC17151-FAC	2024-09-14	2027-09-13

2.3 Uncertainty of Measurement

The value of the measurement uncertainty of each parameter is listed as below:

Table 2: Measurement Uncertainty

Parameter	Uncertainty (k=2)
RF output power, conducted	± 0.99 dB
Occupied Channel Bandwidth	± 2.08 %
RF power density, conducted	± 0.99 dB
Unwanted Emissions, conducted	± 0.89 dB
Radiated Emission of Transmitter, valid up to 26.5 GHz	± 3.68 dB
Radiated Emission of Receiver, valid up to 26.5 GHz	± 3.68 dB

3 General Product Information

3.1 Product Function and Intended Use

The Product is Smart Lock U400 which supports Bluetooth low energy, Thread, NFC and UWB functions.

Product difference description

Smart Lock U400	Version 1	Version 2	Version 3	Version 4	Version 5	Version 6
Model	DL-D06E	DL-D16E	DL-D06D	DL-D16D	DL-D17D	DL-D15D
Color	Black	Silver	Black	Silver	Shadow Black	Satin Nickel
Finishing	Matte (Spray Coating)		Matte (Spray Coating)		Brushed (Electroplating)	
Package content difference	Li-ion Battery × 1		Li-ion Battery × 1 + Hub M100 × 1		Li-ion Battery × 2	
External Panel						
Shape	Curved		Flat		Flat	
Main Body Material	Aluminium		Aluminium		Zinc	
Gliding Plate Material	Aluminium		Zinc		Zinc	
Keypad Material	PC + PET		PMMA		PMMA	
Internal Panel						
Main Body Material	Plastic					
Knob	Aluminium		Aluminium		Zinc	

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Information of EUT	Description
Kind of Equipment:	Smart Lock U400
Type Designation:	DL-D06E, DL-D16E, DL-D06D, DL-D16D, DL-D17D, DL-D15D Note1: The differences between the products refer to above table. Note2: Select model DL-D06E as the main test model.
Operating Voltage:	Battery operated (7.3Vdc, 4880mAh) or USB-C operated (5V)
Operating Temperature Range:	-35 °C ~ +66 °C
Technical Specification of Bluetooth LE	
Characteristic	Description
Frequency Range:	2402 MHz to 2480 MHz
Type of Modulation:	GFSK
Channel Number:	40 channels
Data Rate:	1 Mbps, 2 Mbps
Channel Separation:	2 MHz
Receiver Categories:	Receiver category 2
Antenna Type:	Integral Antenna
Antenna Gain:	1.00 dBi (Provided by the Client)
Technical Specification of Thread	
Characteristic	Description

Operating Frequency:	2405 MHz to 2480 MHz
Type of Modulation:	O-QPSK
Channel Number:	16 channels
Data Rate:	250kbps
Channel Separation:	5 MHz
Receiver Categories:	Receiver category 2
Antenna Type:	Integral Antenna
Antenna Gain:	1.00 dBi for (Provided by the Client)

Note: The correctness of all data provided by customer in the test report is ensured and responsible of the customer. Any misjudgment of the test results caused by the use of incorrect data provided by customer shall be borne by the customer.

Table 4: RF Channel and Frequency of Bluetooth Low Energy

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Test frequencies are lowest channel: 2402 MHz, middle channel: 2440 MHz and highest channel: 2480 MHz

Table 5: RF Channel and Frequency of Thread

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
01	2405.0	05	2425.0	09	2445.0	13	2465.0
02	2410.0	06	2430.0	10	2450.0	14	2470.0
03	2415.0	07	2435.0	11	2455.0	15	2475.0
04	2420.0	08	2440.0	12	2460.0	16	2480.0

Test frequencies are lowest channel: 2405 MHz, middle channel: 2445 MHz and highest channel: 2480 MHz

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Bluetooth wireless
 - 1 Transmitting (Low / Middle / High channel)
 - 2 Receiving (Low / Middle / High channel)
- B. On, Thread wireless
 - 1 Transmitting (Low / Middle / High channel)
 - 2 Receiving (Low / Middle / High channel)
- C. On, Bluetooth connecting mode
- D. On, Thread connecting mode
- E. Off

3.4 Noise Generating and Noise Suppressing Parts

For details refer to the Circuit Diagram.

3.5 Submitted Documents

- | | |
|-------------------------|----------------|
| - Application Form | - User Manual |
| - Operation Description | - Rating Label |

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5 and chapter 7.

According to clause 3.1, all tests were performed on model *DL-D06E* in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 6: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N
Laptop	Lenovo	T480	PF-16A6N8

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 RF Output Power

RESULT:

Pass

Test Specification

Test standard	: EN 300 328 V2.2.2
Test requirement	: EN 300 328 V2.2.2, Clause 4.3.2.2
Limit	: EN 300 328 V2.2.2, Clause 4.3.2.2.3
Test suites	: EN 300 328 V2.2.2, Clause 5.4.2
Kind of test site	: Shielding Room

Test Setup

Date of testing	: 2025-04-24
Test voltage	: Battery operated (7.3Vdc)
Test environment	: Normal and extreme temperature
Operation mode	: A.1, B.1
Ambient temperature	: 24 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101 kPa

For details refer to following test result.

Table 7: Test Result of RF Output Power, Bluetooth LE

Test Mode	Test Conditions		Measured e.i.r.p. (dBm)		
			Low Channel	Middle Channel	High Channel
Bluetooth LE (1 Mbps)	Normal	+24 °C	8.11	7.59	7.77
	Extreme	-35 °C	8.50	7.98	8.16
		+66 °C	7.77	7.25	7.43
	Maximum Measured Value		8.50		
Bluetooth LE (2 Mbps)	Normal	+24 °C	8.12	7.58	7.77
	Extreme	-35 °C	8.52	7.98	8.17
		+66 °C	7.83	7.29	7.48
	Maximum Measured Value		8.52		
Limit			≤ 100mW (20dBm)		

Table 8: Test Result of RF Output Power, Thread

Test Mode	Test Conditions		Measured e.i.r.p. (dBm)		
			Low Channel	Middle Channel	High Channel
Thread	Normal	+24 °C	8.11	7.58	7.8
	Extreme	-35 °C	8.46	7.93	8.15
		+66 °C	7.81	7.28	7.50
	Maximum Measured Value			8.46	
Limit			≤ 100mW (20dBm)		

NOTE:

The RF Output Power (E.I.R.P.) should be calculated using the formula below:

The RF Output Power (E.I.R.P.) = $A_{(RMS\ power)} + G + Y$

Antenna gain(G) of Bluetooth: 1.00 dBi

Antenna gain(G) of Thread: 1.00 dBi

5.1.2 Power Spectral Density

RESULT:**Pass****Test Specification**

Test standard	: EN 300 328 V2.2.2
Test requirement	: EN 300 328 V2.2.2, Clause 4.3.2.3
Limit	: EN 300 328 V2.2.2, Clause 4.3.2.3.3
Test suites	: EN 300 328 V2.2.2, Clause 5.4.3
Kind of test site	: Shielding Room

Test Setup

Date of testing	: 2025-04-24
Test voltage	: Battery operated (7.3Vdc)
Test environment	: Normal temperature
Operation mode	: A.1, B.1
Test channel	: Low / Middle / High
Ambient temperature	: 24 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A, B.

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5.1.3 Duty Cycle, TX-sequence, TX-gap

RESULT:

Not applicable

Test Specification

Test standard : EN 300 328 V2.2.2

Test requirement : EN 300 328 V2.2.2, Clause 4.3.2.4

Exemption Condition(s):

☒ These requirements apply to non-adaptive equipment or to adaptive equipment when operating in non-adaptive mode. The equipment is using wide band modulations other than FHSS.

Conclusion:

The EUT is adaptive equipment and does not support non-adaptive mode, hence this requirement is not applicable.

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5.1.4 Medium Utilisation (MU) Factor

RESULT:

Not applicable

Test Specification

Test standard : EN 300 328 V2.2.2

Test requirement : EN 300 328 V2.2.2, Clause 4.3.2.5

Exemption Condition(s):

☒ These requirements apply to non-adaptive equipment or to adaptive equipment when operating in non-adaptive mode. The equipment is using wide band modulations other than FHSS.

Conclusion:

The EUT is adaptive equipment and does not support non-adaptive mode, hence this requirement is not applicable.

5.1.5 Adaptivity

RESULT:

Not applicable

Test Specification

Test standard	: EN 300 328 V2.2.2
Test requirement	: EN 300 328 V2.2.2, Clause 4.3.2.6
Limit	: EN 300 328 V2.2.2, Clause 4.3.2.6
Test suites	: EN 300 328 V2.2.2, Clause 5.4.6
Kind of test site	: Shielding Room

Exemption Condition(s):

☒ These requirements do not apply for equipment with a maximum declared RF Output power of less than 10 dBm e.i.r.p. or for equipment when operating in a mode where the RF Output power is less than 10 dBm e.i.r.p.

Conclusion:

The maximum declared RF output power is less than 10dBm e.i.r.p., hence this requirement is not applicable.

5.1.6 Occupied Channel Bandwidth

RESULT:

Pass

Test Specification

Test standard	: EN 300 328 V2.2.2
Test requirement	: EN 300 328 V2.2.2, Clause 4.3.2.7
Limit	: EN 300 328 V2.2.2, Clause 4.3.2.7.3
Test suites	: EN 300 328 V2.2.2, Clause 5.4.7
Kind of test site	: Shielding Room

Test Setup

Date of testing	: 2025-04-24
Test voltage	: Battery operated (7.3Vdc)
Test environment	: Normal temperature
Operation mode	: A.1, B.1
Test channel	: Low / Middle / High
Ambient temperature	: 24 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A, B.

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5.1.7 Transmitter Unwanted Emissions in the OOB Domain

RESULT:**Pass****Test Specification**

Test standard	: EN 300 328 V2.2.2
Test requirement	: EN 300 328 V2.2.2, Clause 4.3.2.8
Limit	: EN 300 328 V2.2.2, Clause 4.3.2.8.3
Test suites	: EN 300 328 V2.2.2, Clause 5.4.8
Kind of test site	: Shielding Room

Test Setup

Date of testing	: 2025-04-24
Test voltage	: Battery operated (7.3Vdc)
Test environment	: Normal temperature
Operation mode	: A.1, B.1
Test channel	: Low / High
Ambient temperature	: 24 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A, B.

5.1.8 Transmitter Unwanted Emissions in the Spurious Domain

RESULT:**Pass****Test Specification**

Test standard	: EN 300 328 V2.2.2
Test requirement	: EN 300 328 V2.2.2, Clause 4.3.2.9
Limit	: EN 300 328 V2.2.2, Clause 4.3.2.9.3
Test suites	: EN 300 328 V2.2.2, Clause 5.4.9
Kind of test site	: 3m Fully Anechoic Room

Test Setup

Date of testing	: 2025-04-30
Test voltage	: Battery operated (7.3Vdc)
Test environment	: Normal temperature
Operation mode	: A.1, B.1
Test channel	: Low / High
Ambient temperature	: Refer to test results
Relative humidity	: Refer to test results
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A, B.

5.2 Receiver Requirement & Test Suites

5.2.1 Receiver Spurious Emissions

RESULT:

Pass

Test Specification

Test standard	: EN 300 328 V2.2.2
Test requirement	: EN 300 328 V2.2.2, Clause 4.3.2.10
Limit	: EN 300 328 V2.2.2, Clause 4.3.2.10.3
Test suites	: EN 300 328 V2.2.2, Clause 5.4.10
Kind of test site	: 3m Fully Anechoic Room

Test Setup

Date of testing	: 2025-04-30
Test voltage	: Battery operated (7.3Vdc)
Test environment	: Normal temperature
Operation mode	: A.2, B.2
Test channel	: Low / High
Ambient temperature	: Refer to test results
Relative humidity	: Refer to test results
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A, B.

5.2.2 Receiver Blocking

RESULT:**Pass****Test Specification**

Test standard	: EN 300 328 V2.2.2
Test requirement	: EN 300 328 V2.2.2, Clause 4.3.2.11
Limit	: EN 300 328 V2.2.2, Clause 4.3.2.11.3
Test suites	: EN 300 328 V2.2.2, Clause 5.4.11
Kind of test site	: Shielding Room

Test Setup

Date of testing	: 2025-04-24
Test voltage	: Battery operated (7.3Vdc)
Test environment	: Normal temperature
Operation mode	: A.2, B.2
Test channel	: Low / High
Ambient temperature	: 24 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101 kPa

Receiver category

Bluetooth LE: Adaptive equipment with a maximum RF output power greater than 0 dBm e.i.r.p. and less than or equal to 10dBm e.i.r.p. shall be considered as receiver category 2 equipment.

Thread: Adaptive equipment with a maximum RF output power greater than 0 dBm e.i.r.p. and less than or equal to 10dBm e.i.r.p. shall be considered as receiver category 2 equipment.

For the measurement records, refer to the appendix A, B.

Prüfbericht - Nr.: CN25D2HQ 002
Test Report No.:

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5.2.3 Geo-location Capability

RESULT:

Not applicable

Test Specification

Test standard : EN 300 328 V2.2.2
Test requirement : EN 300 328 V2.2.2, Clause 4.3.2.12

Exemption Condition(s):

This requirement only applies to equipment with geo-location capability as defined in clause 4.3.2.12.2.

Conclusion:

The EUT is adaptive equipment and does not support geo-location capability, hence this requirement is not applicable.

6 Safety Human Exposure

6.1 Human Exposure to Electromagnetic Fields 10MHz-300GHz

6.1.1 Electromagnetic Fields

RESULT:

Pass

Test Specification

Test standard : EN 62479: 2010

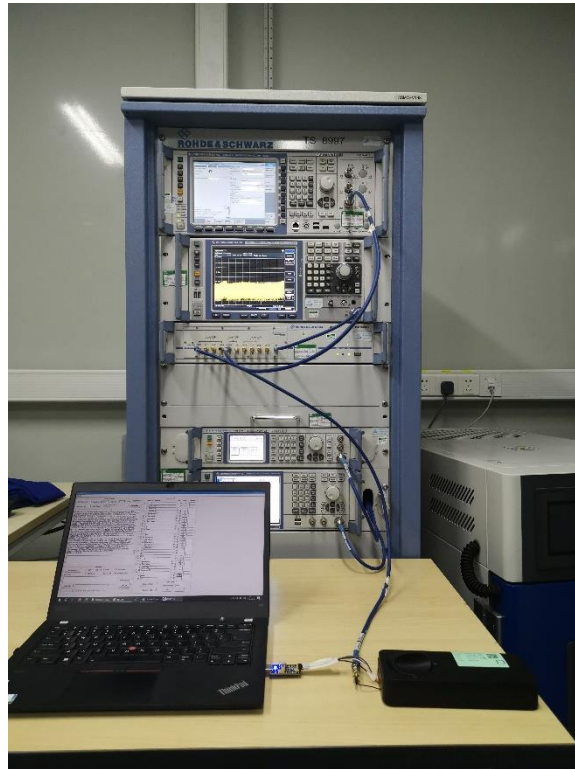
Bluetooth LE: The maximum measured peak power of EUT is only 8.52 dBm (7.112mW).

Thread: The maximum measured peak power of EUT is only 8.46 dBm (7.015mW).

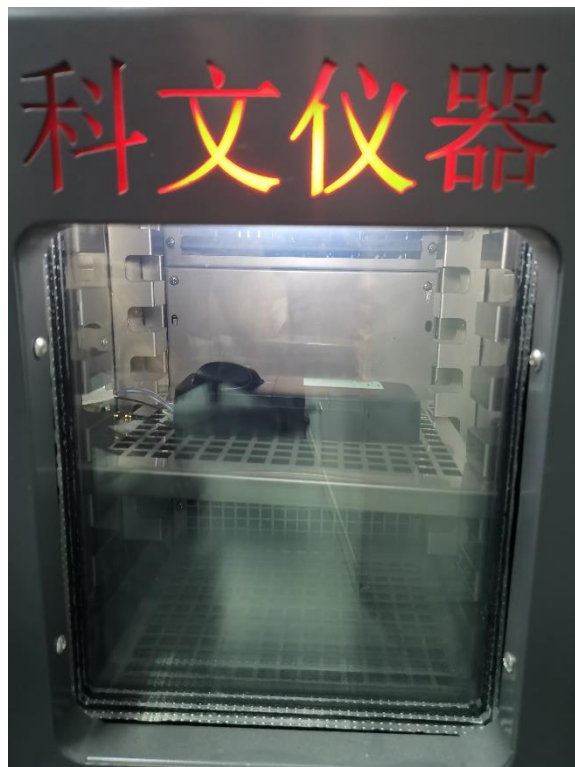
According to EN 62479:2010 clause 4.2, if the average total radiated power emitted by apparatus operating in the frequency range 10MHz-300GHz is less than or equal to 13.01dBm(20mW), then the apparatus is deemed to comply with the basic restrictions without testing.

7 Photographs of the Test Set-Up

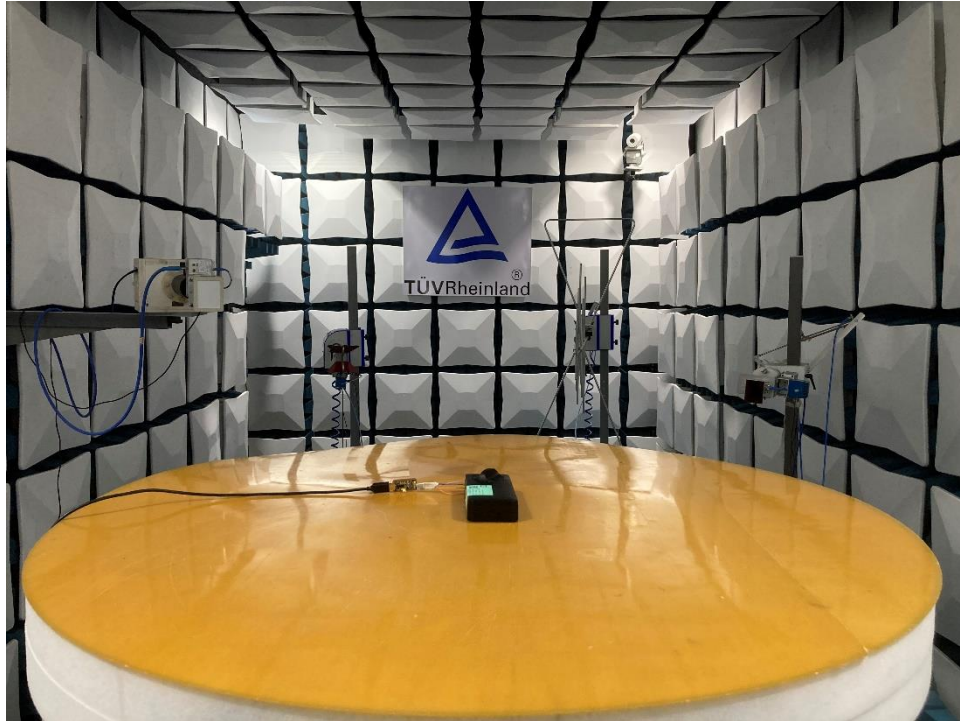
Photograph 1: Set-up for Radio Spectrum Testing, Normal Condition



Photograph 2: Set-up for Radio Spectrum Testing, Extreme Condition



Photograph 3: Set-up for Transmitter & Receiver Spurious Emissions, Below & Above 1GHz



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Bluetooth LE, 1Mbps	34

Appendix A.1: Test Results of Power Spectral Density

Bluetooth LE, 1Mbps

Power Spectral Density (2402 MHz; 10.000 dBm; 1 MHz)

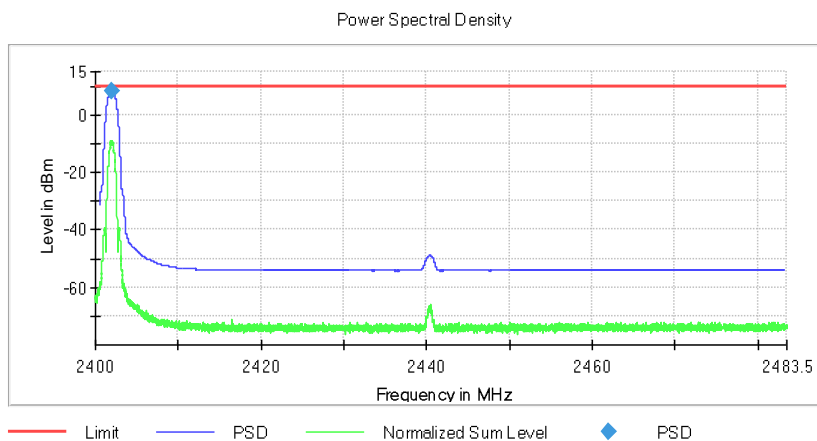
Definition: The Power Spectral Density is the mean equivalent isotropically radiated power (e.i.r.p.) spectral density in a 1 MHz bandwidth during a transmission burst.

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2402.000000	2401.964765	8.061	10.0	PASS

Ports

Port	State
1	used



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	8351	~ 8351
SweepTime	20.000 s	20.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	2	2
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Power Spectral Density (2440 MHz; 10.000 dBm; 1 MHz)

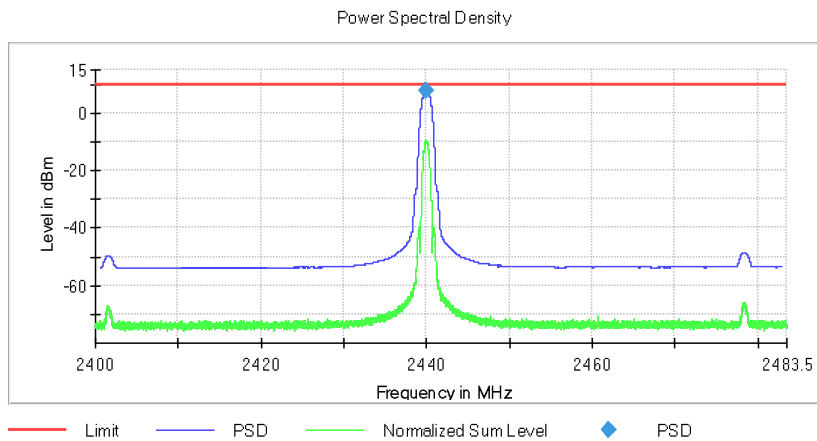
Definition: The Power Spectral Density is the mean equivalent isotropically radiated power (e.i.r.p.) spectral density in a 1 MHz bandwidth during a transmission burst.

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2440.000000	2439.960214	7.539	10.0	PASS

Ports

Port	State
1	used



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	8351	~ 8351
SweepTime	20.000 s	20.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	2	2
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Power Spectral Density (2480 MHz; 10.000 dBm; 1 MHz)

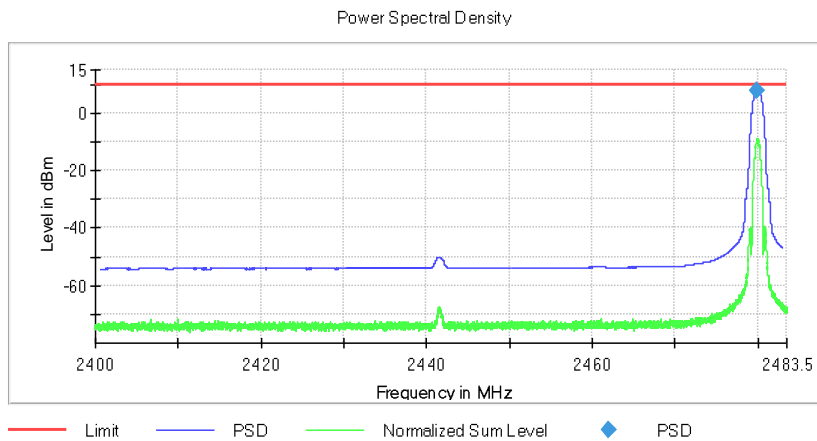
Definition: The Power Spectral Density is the mean equivalent isotropically radiated power (e.i.r.p.) spectral density in a 1 MHz bandwidth during a transmission burst.

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2479.965423	7.722	10.0	PASS

Ports

Port	State
1	used



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	8351	~ 8351
SweepTime	20.000 s	20.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	2	2
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off

Bluetooth LE, 2Mbps

Power Spectral Density (2402 MHz; 10.000 dBm; 2 MHz)

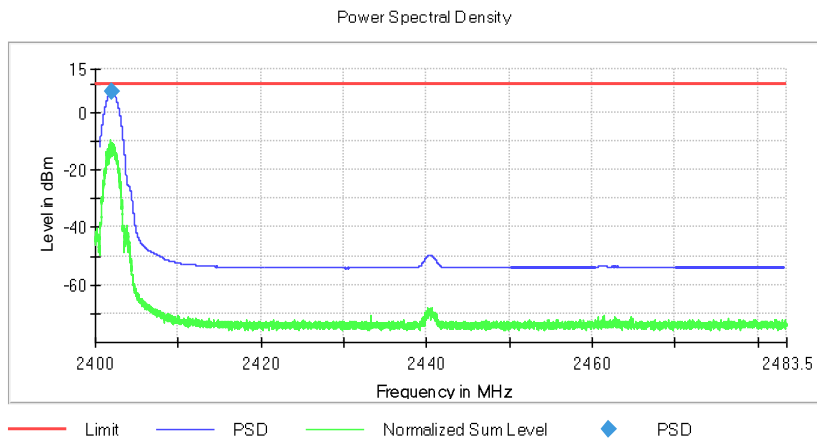
Definition: The Power Spectral Density is the mean equivalent isotropically radiated power (e.i.r.p.) spectral density in a 1 MHz bandwidth during a transmission burst.

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2402.000000	2401.974764	6.984	10.0	PASS

Ports

Port	State
1	used



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	8351	~ 8351
SweepTime	20.000 s	20.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	2	2
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Power Spectral Density (2440 MHz; 10.000 dBm; 2 MHz)

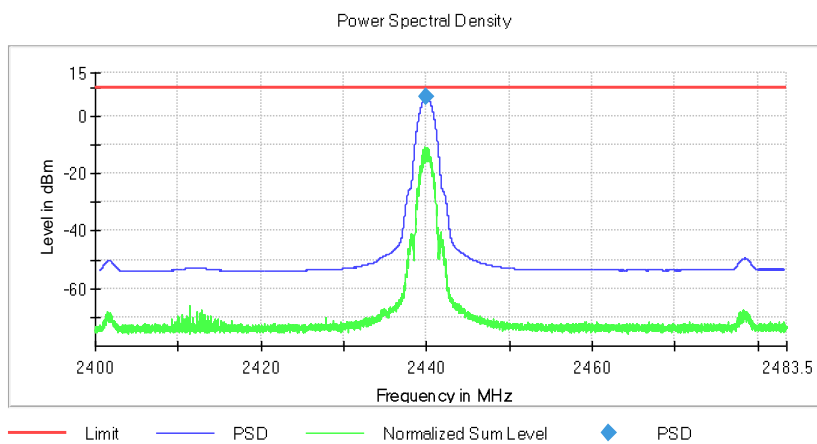
Definition: The Power Spectral Density is the mean equivalent isotropically radiated power (e.i.r.p.) spectral density in a 1 MHz bandwidth during a transmission burst.

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2440.000000	2439.970213	6.439	10.0	PASS

Ports

Port	State
1	used



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	8351	~ 8351
SweepTime	20.000 s	20.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	2	2
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Power Spectral Density (2480 MHz; 10.000 dBm; 2 MHz)

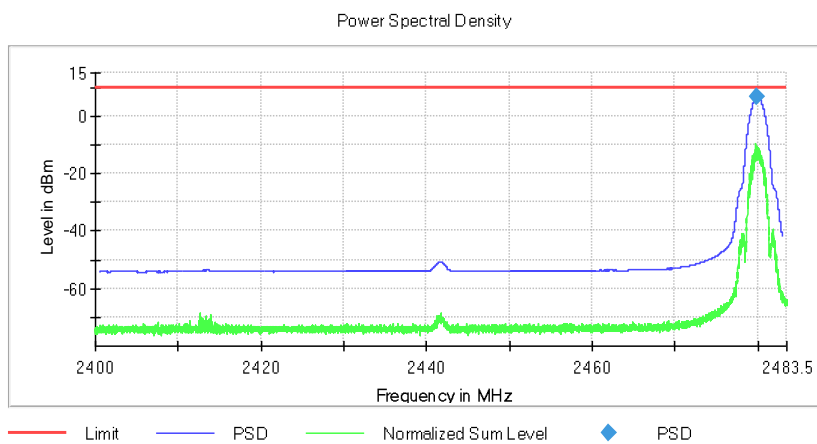
Definition: The Power Spectral Density is the mean equivalent isotropically radiated power (e.i.r.p.) spectral density in a 1 MHz bandwidth during a transmission burst.

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2479.975422	6.623	10.0	PASS

Ports

Port	State
1	used



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	8351	~ 8351
SweepTime	20.000 s	20.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	2	2
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Appendix A.2: Test Results of Occupied Channel Bandwidth

Bluetooth LE, 1Mbps

Occupied Channel Bandwidth (2402 MHz; 10.000 dBm; 1 MHz)

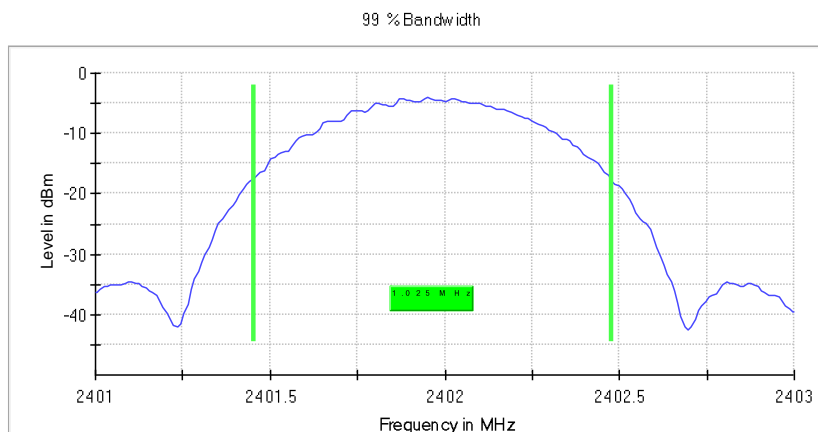
Definition: The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Limit Min BE L (MHz)
2402.000000	1.024876	---	---	2401.452736	2400.000000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Band Edge Right (MHz)	Limit Max BE R (MHz)	Result
2402.000000	2402.477612	2483.500000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	20.000 kHz	>= 20.000 kHz
VBW	100.000 kHz	>= 60.000 kHz
SweepPoints	201	~ 201
Sweeptime	1.000 s	1.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	15.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.12 dB	0.50 dB

Occupied Channel Bandwidth (2440 MHz; 10.000 dBm; 1 MHz)

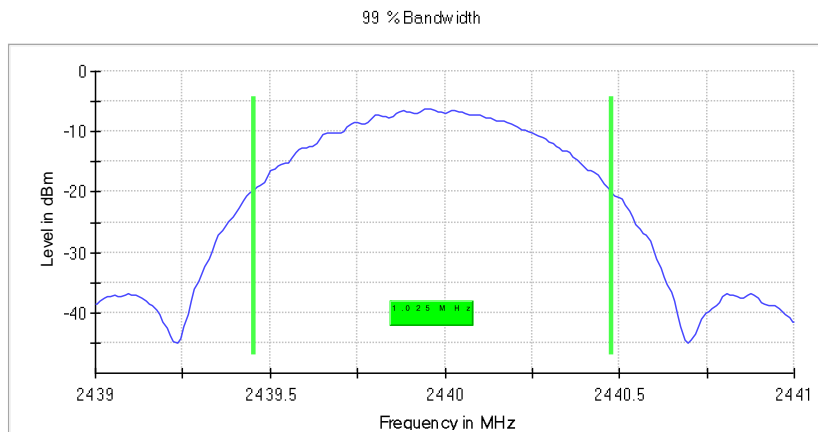
Definition: The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Limit Min BE L (MHz)
2440.000000	1.024876	---	---	2439.452736	2400.000000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Band Edge Right (MHz)	Limit Max BE R (MHz)	Result
2440.000000	2440.477612	2483.500000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44100 GHz	2.44100 GHz
Span	2.000 MHz	2.000 MHz
RBW	20.000 kHz	>= 20.000 kHz
VBW	100.000 kHz	>= 60.000 kHz
SweepPoints	201	~ 201
Sweeptime	1.000 s	1.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

Occupied Channel Bandwidth (2480 MHz; 10.000 dBm; 1 MHz)

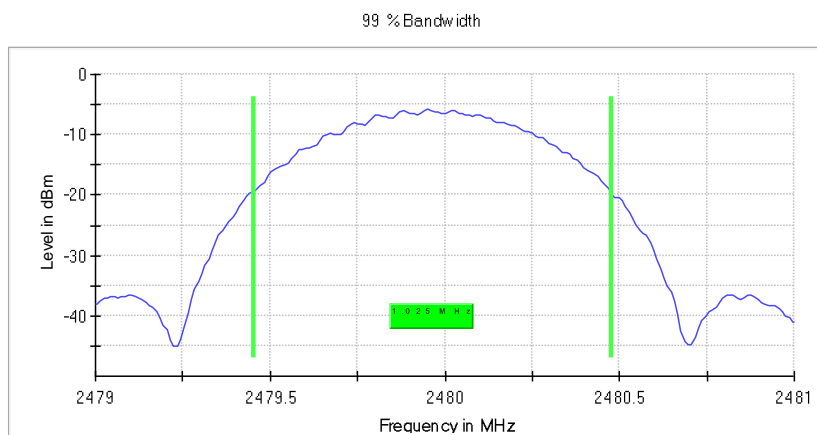
Definition: The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Limit Min BE L (MHz)
2480.000000	1.024876	---	---	2479.452736	2400.000000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Band Edge Right (MHz)	Limit Max BE R (MHz)	Result
2480.000000	2480.477612	2483.500000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	20.000 kHz	>= 20.000 kHz
VBW	100.000 kHz	>= 60.000 kHz
SweepPoints	201	~ 201
Sweeptime	1.000 s	1.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.07 dB	0.50 dB

Bluetooth LE, 2Mbps

Occupied Channel Bandwidth (2402 MHz; 10.000 dBm; 2 MHz)

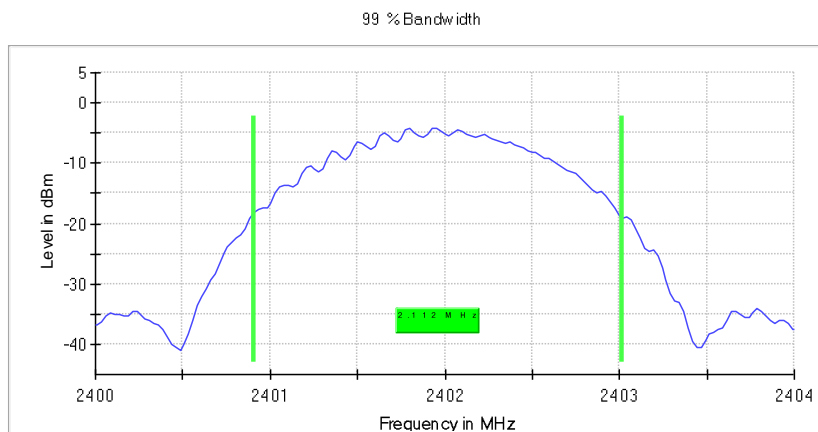
Definition: The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Limit Min BE L (MHz)
2402.000000	2.111802	---	---	2400.906832	2400.000000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Band Edge Right (MHz)	Limit Max BE R (MHz)	Result
2402.000000	2403.018634	2483.500000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	4.000 MHz	4.000 MHz
RBW	50.000 kHz	>= 40.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	161	~ 161
SweepTime	1.000 s	1.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.03 dB	0.50 dB

Occupied Channel Bandwidth (2440 MHz; 10.000 dBm; 2 MHz)

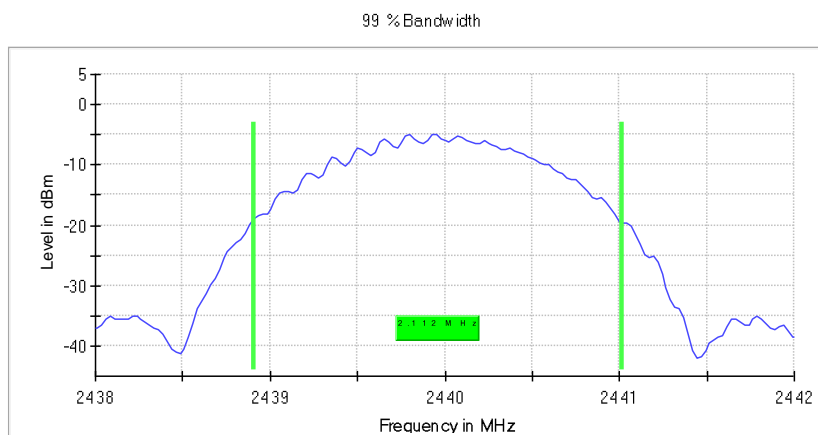
Definition: The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Limit Min BE L (MHz)
2440.000000	2.111802	---	---	2438.906832	2400.000000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Band Edge Right (MHz)	Limit Max BE R (MHz)	Result
2440.000000	2441.018634	2483.500000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43800 GHz	2.43800 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	4.000 MHz	4.000 MHz
RBW	50.000 kHz	>= 40.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	161	~ 161
Sweeptime	1.000 s	1.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.05 dB	0.50 dB

Occupied Channel Bandwidth (2480 MHz; 10.000 dBm; 2 MHz)

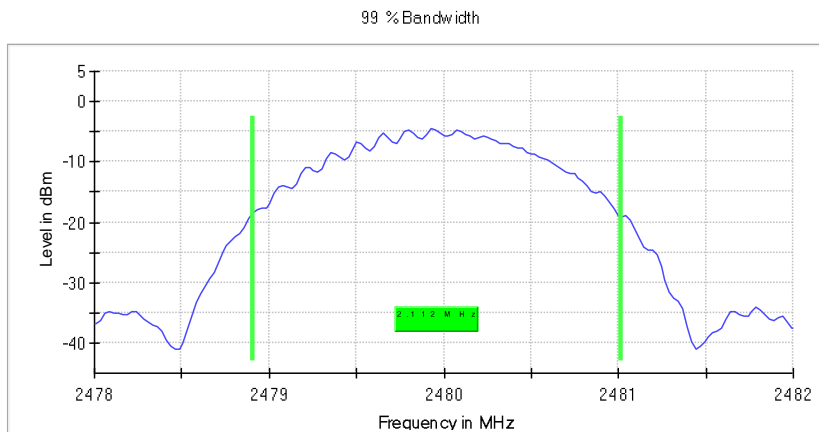
Definition: The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Limit Min BE L (MHz)
2480.000000	2.111802	---	---	2478.906832	2400.000000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Band Edge Right (MHz)	Limit Max BE R (MHz)	Result
2480.000000	2481.018634	2483.500000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47800 GHz	2.47800 GHz
Stop Frequency	2.48200 GHz	2.48200 GHz
Span	4.000 MHz	4.000 MHz
RBW	50.000 kHz	>= 40.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	161	~ 161
Sweeptime	1.000 s	1.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.01 dB	0.50 dB

Appendix A.3: Test Results of Transmitter Unwanted Emissions in the Out-of-band Domain

Bluetooth LE, 1Mbps

Tx unwanted emissions in the out-of-band domain (2402 MHz; 10.000 dBm; 1 MHz)

Transmitter unwanted emissions in the out-of-band domain are emissions when the equipment is in Transmit mode, on frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions.

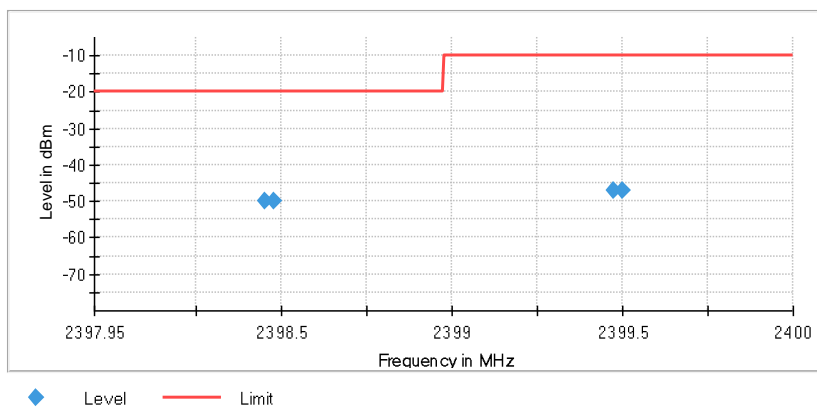
Summary

DUT Frequency (MHz)	FAIL	PASS	Result
2402.000000	0	8	PASS

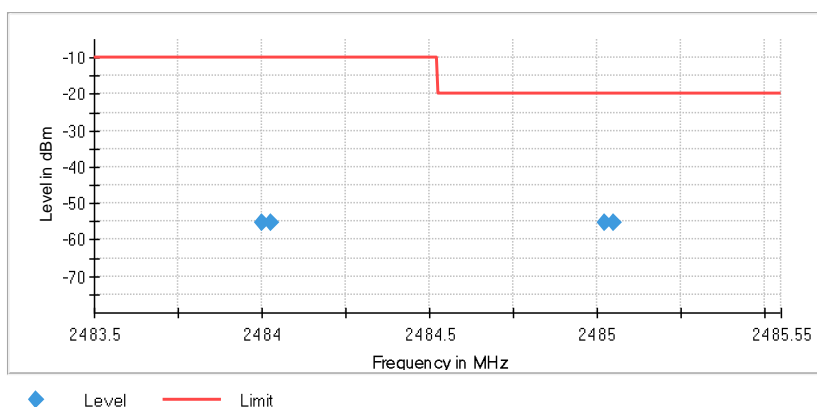
Measurements

Frequency (MHz)	level (dBm)	Limit (dBm)	Result
2398.450248	-50.0	-20.0	PASS
2398.475124	-50.0	-20.0	PASS
2399.475124	-47.0	-10.0	PASS
2399.500000	-46.9	-10.0	PASS
2484.000000	-55.4	-10.0	PASS
2484.024876	-55.4	-10.0	PASS
2485.024876	-55.4	-20.0	PASS
2485.049752	-55.4	-20.0	PASS

Out of band low



Out of band high



Tx unwanted emissions in the out-of-band domain (2480 MHz; 10.000 dBm; 1 MHz)

Transmitter unwanted emissions in the out-of-band domain are emissions when the equipment is in Transmit mode, on frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions.

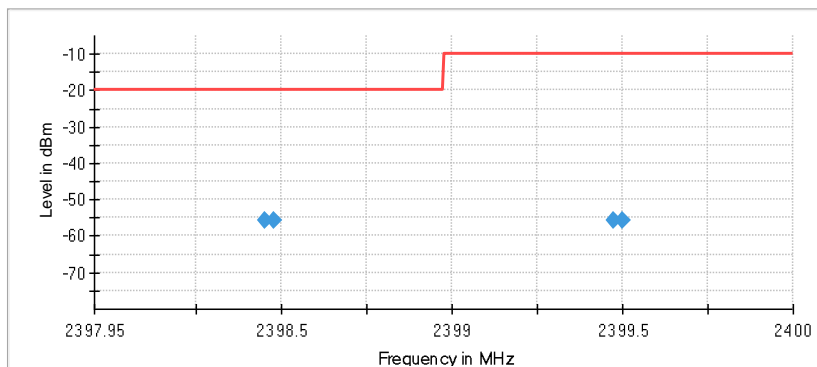
Summary

DUT Frequency (MHz)	FAIL	PASS	Result
2480.000000	0	8	PASS

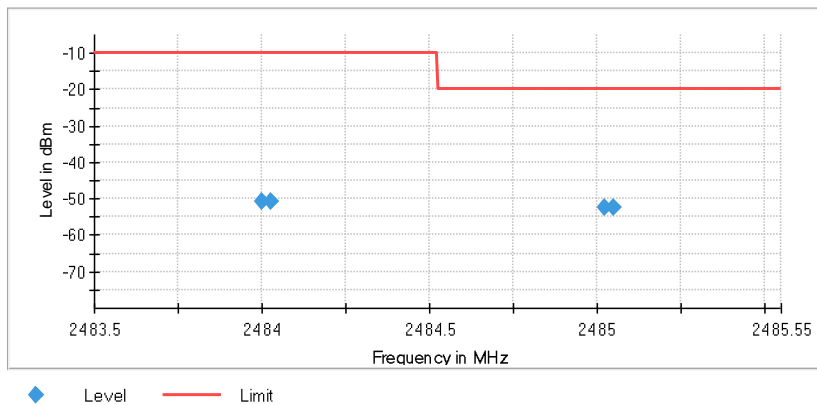
Measurements

Frequency (MHz)	level (dBm)	Limit (dBm)	Result
2398.450248	-55.8	-20.0	PASS
2398.475124	-55.8	-20.0	PASS
2399.475124	-55.8	-10.0	PASS
2399.500000	-55.8	-10.0	PASS
2484.000000	-50.8	-10.0	PASS
2484.024876	-50.8	-10.0	PASS
2485.024876	-52.3	-20.0	PASS
2485.049752	-52.3	-20.0	PASS

Out of band low



Out of band high



Bluetooth LE, 2Mbps

Tx unwanted emissions in the out-of-band domain (2402 MHz; 10.000 dBm; 2 MHz)

Transmitter unwanted emissions in the out-of-band domain are emissions when the equipment is in Transmit mode, on frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions.

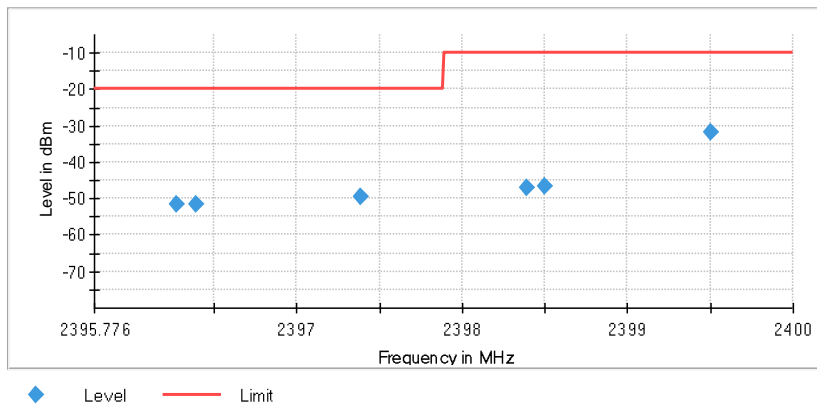
Summary

DUT Frequency (MHz)	FAIL	PASS	Result
2402.000000	0	12	PASS

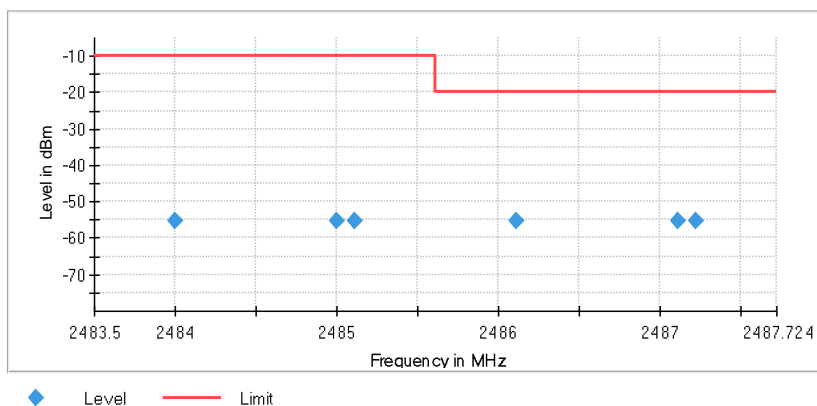
Measurements

Frequency (MHz)	level (dBm)	Limit (dBm)	Result
2396.276396	-51.6	-20.0	PASS
2396.388198	-51.4	-20.0	PASS
2397.388198	-49.6	-20.0	PASS
2398.388198	-46.9	-10.0	PASS
2398.500000	-46.5	-10.0	PASS
2399.500000	-31.9	-10.0	PASS
2484.000000	-55.4	-10.0	PASS
2485.000000	-55.4	-10.0	PASS
2485.111802	-55.4	-10.0	PASS
2486.111802	-55.4	-20.0	PASS
2487.111802	-55.4	-20.0	PASS
2487.223604	-55.4	-20.0	PASS

Out of band low



Out of band high



Tx unwanted emissions in the out-of-band domain (2480 MHz; 10.000 dBm; 2 MHz)

Transmitter unwanted emissions in the out-of-band domain are emissions when the equipment is in Transmit mode, on frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions.

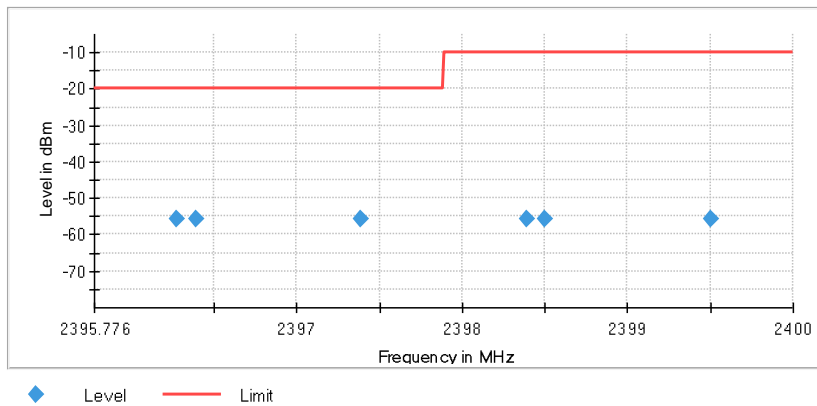
Summary

DUT Frequency (MHz)	FAIL	PASS	Result
2480.000000	0	12	PASS

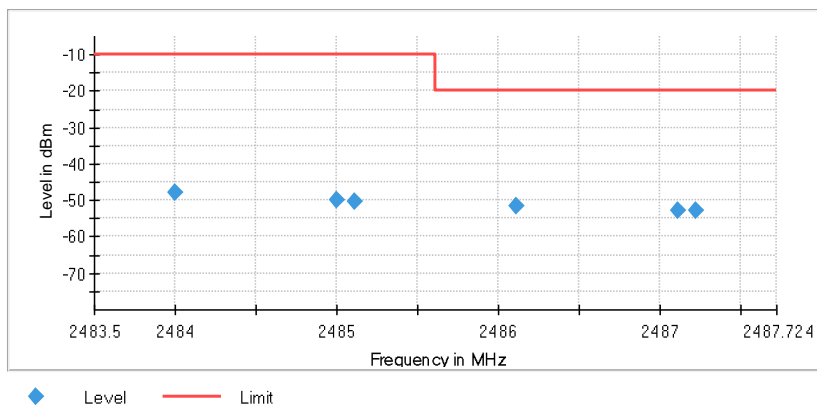
Measurements

Frequency (MHz)	level (dBm)	Limit (dBm)	Result
2396.276396	-55.9	-20.0	PASS
2396.388198	-55.8	-20.0	PASS
2397.388198	-55.8	-20.0	PASS
2398.388198	-55.9	-10.0	PASS
2398.500000	-55.8	-10.0	PASS
2399.500000	-55.8	-10.0	PASS
2484.000000	-48.0	-10.0	PASS
2485.000000	-49.9	-10.0	PASS
2485.111802	-50.1	-10.0	PASS
2486.111802	-51.7	-20.0	PASS
2487.111802	-52.8	-20.0	PASS
2487.223604	-52.9	-20.0	PASS

Out of band low



Out of band high



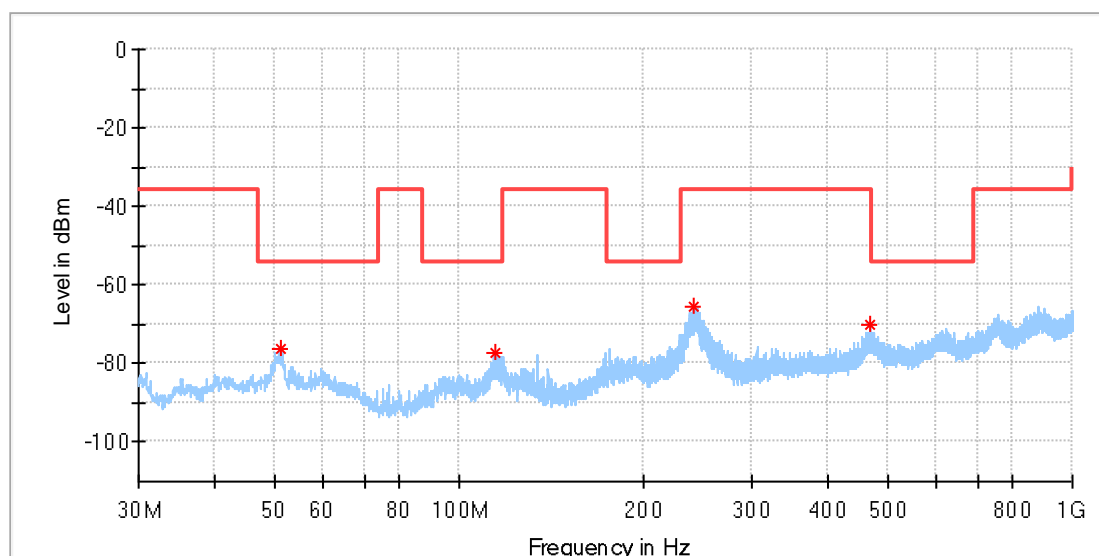
Appendix A.4: Test Results of Transmitter Unwanted Emissions in the Spurious Domain

Note: 1. Testing was carried out within frequency range 25 MHz to the tenth harmonics. The measurement results below 30MHz and above 12.75GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 12.75GHz were reported. 2. This testing was carried out on different modulations, but only the worst case was presented in this report.

Below 1GHz

EUT Information

EUT Name:	Smart Lock U400
Model:	DL-D06E
Sample No:	A003967556-005
Test Mode:	TX_BLE L CH
Test Voltage:	Battery
Remark:	Temp:23.4;Humi:50%
Test standard:	EN 300328
Tested By:	Lich Chen
Reviewed by	Terry Yin

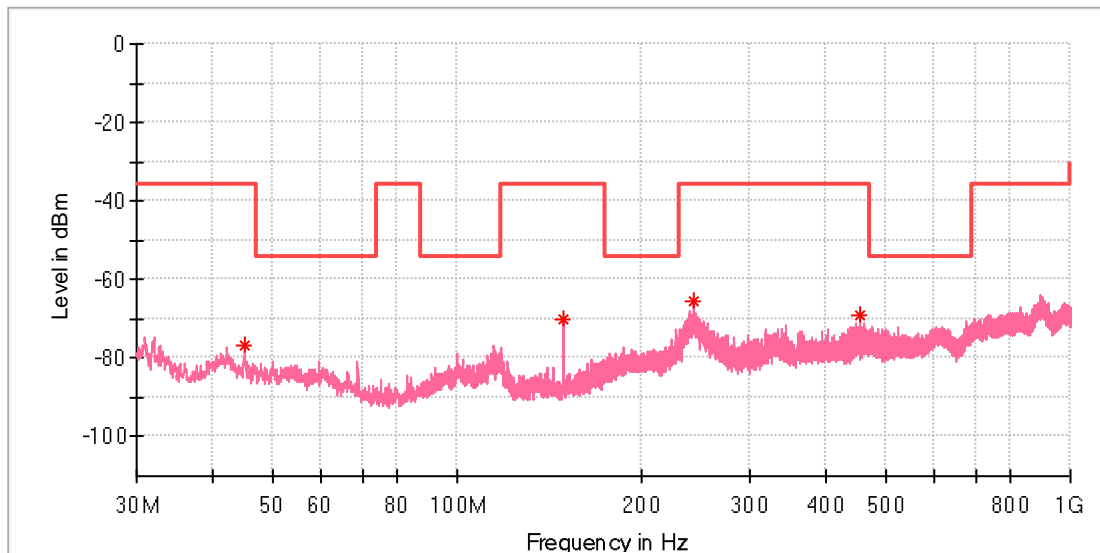


Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.097500	-76.22	-54.00	22.22	150.0	H	131.0	-121.5
114.438500	-77.37	-54.00	23.37	150.0	H	335.0	-122.5
241.605500	-65.66	-36.00	29.66	150.0	H	280.0	-117.2
467.373000	-70.30	-36.00	34.30	150.0	H	167.0	-110.6

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: TX_BLE L CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

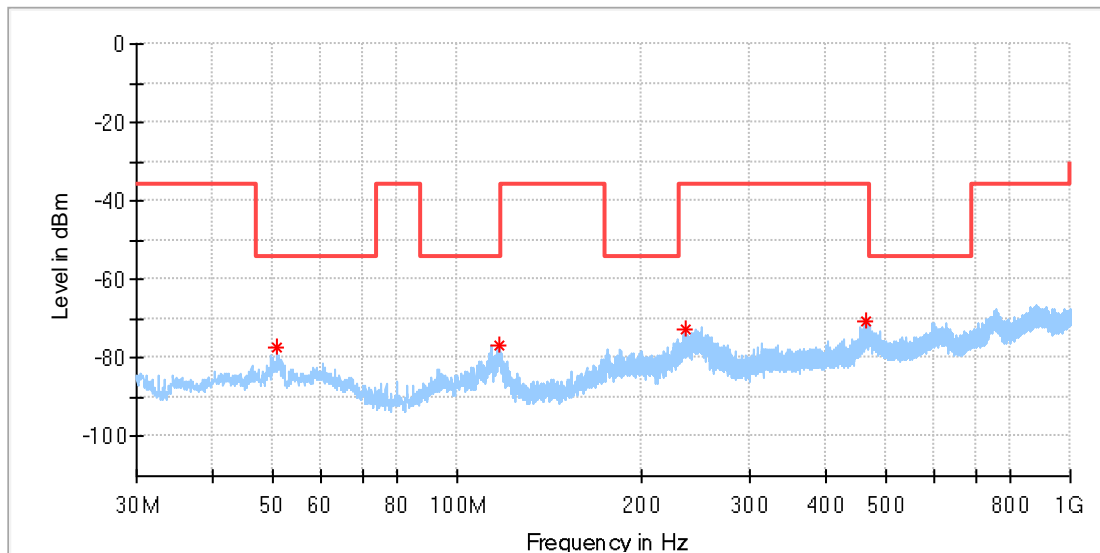


Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
44.986500	-76.87	-36.00	40.87	150.0	V	160.0	-117.5
149.261500	-70.09	-36.00	34.09	150.0	V	268.0	-124.0
242.478500	-65.68	-36.00	29.68	150.0	V	183.0	-117.5
455.102500	-69.10	-36.00	33.10	150.0	V	197.0	-113.6

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: TX_BLE H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

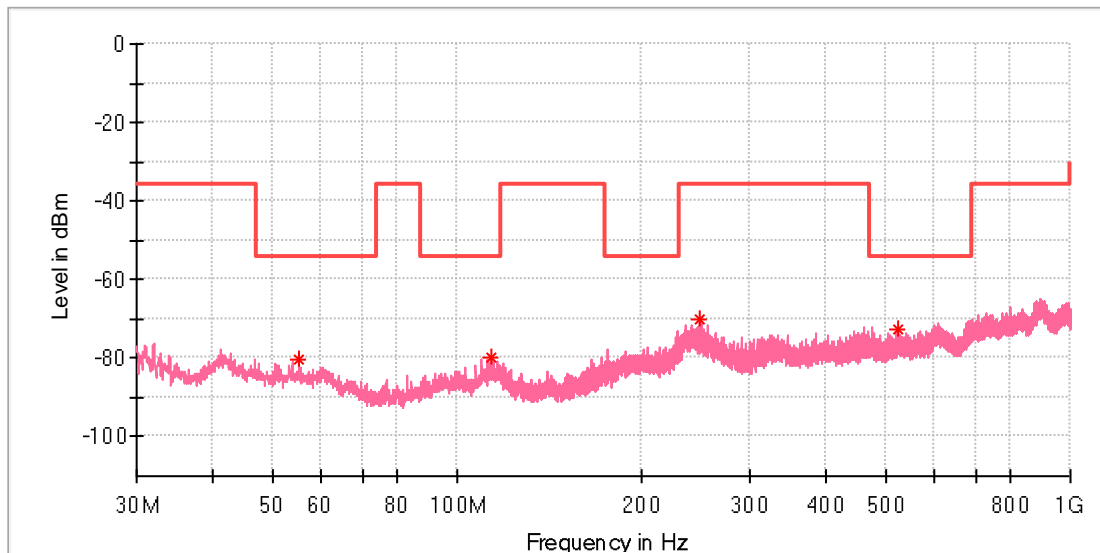


Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
50.903500	-77.45	-54.00	23.45	150.0	H	312.0	-121.5
116.912000	-76.61	-54.00	22.61	150.0	H	270.0	-122.6
235.979500	-72.46	-36.00	36.46	150.0	H	132.0	-117.5
463.493000	-70.44	-36.00	34.44	150.0	H	98.0	-110.9

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: TX_BLE H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin



Critical Freqs

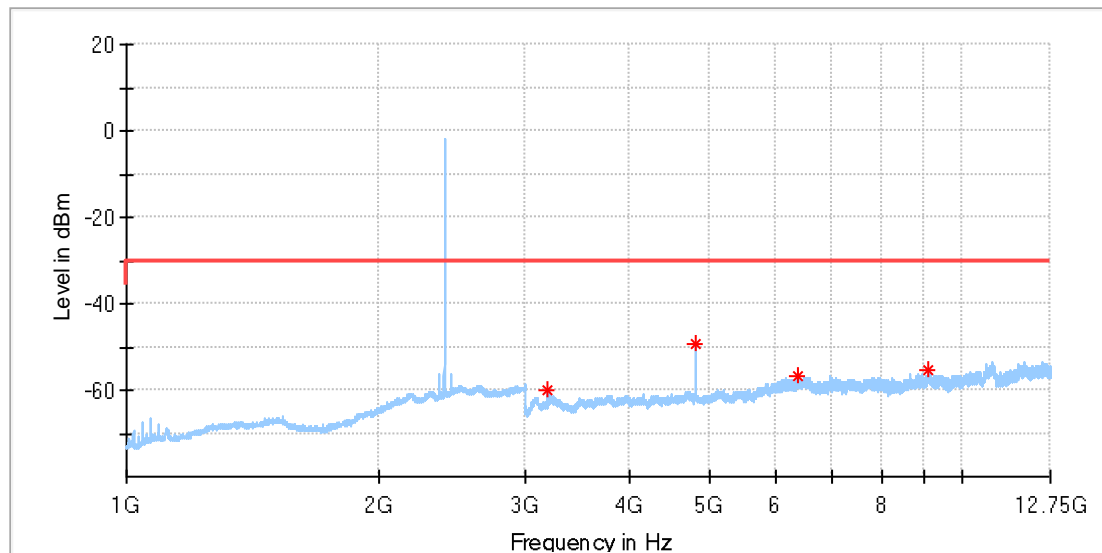
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
55.123000	-80.43	-54.00	26.43	150.0	V	49.0	-119.1
113.905000	-79.71	-54.00	25.71	150.0	V	218.0	-120.8
248.444000	-69.97	-36.00	33.97	150.0	V	0.0	-117.4
523.390500	-72.45	-54.00	18.45	150.0	V	232.0	-112.4

Above 1GHz

Note: The highest waveform in the figure is Bluetooth Fundamental.

EUT Information

EUT Name:	Smart Lock U400
Model:	DL-D06E
Sample No:	A003967556-005
Test Mode:	TX_BLE L CH
Test Voltage:	Battery
Remark:	Temp:23.4;Humi:50%
Test standard:	EN 300328
Tested By:	Lich Chen
Reviewed by	Terry Yin

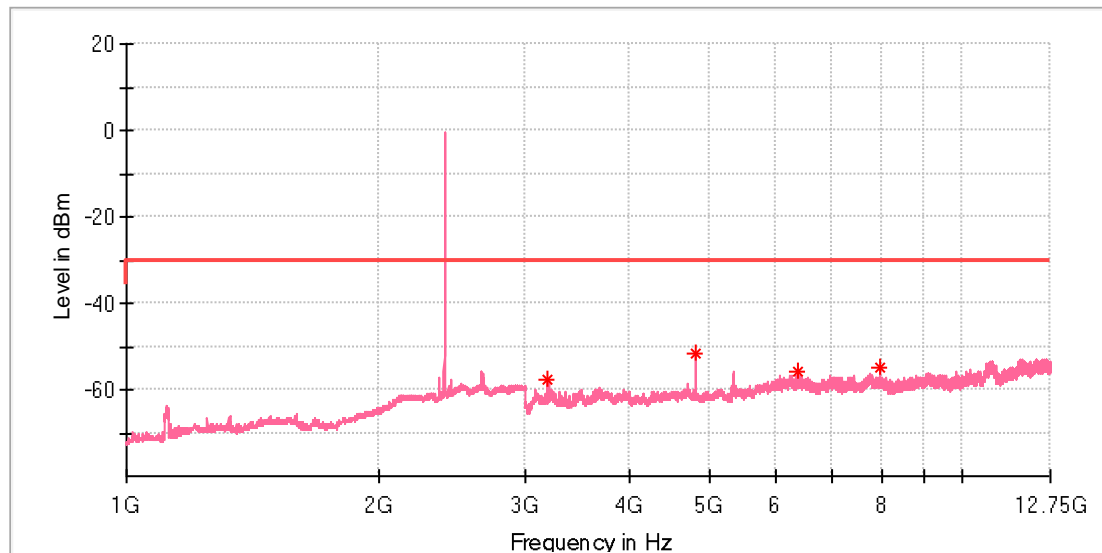


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3186.000000	-59.80	-30.00	29.80	150.0	H	77.0	-95.4
4804.000000	-49.14	-30.00	19.14	150.0	H	31.0	-92.9
6367.875000	-56.76	-30.00	26.76	150.0	H	216.0	-89.6
9124.767857	-55.36	-30.00	25.36	150.0	H	32.0	-87.4

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: TX_BLE L CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

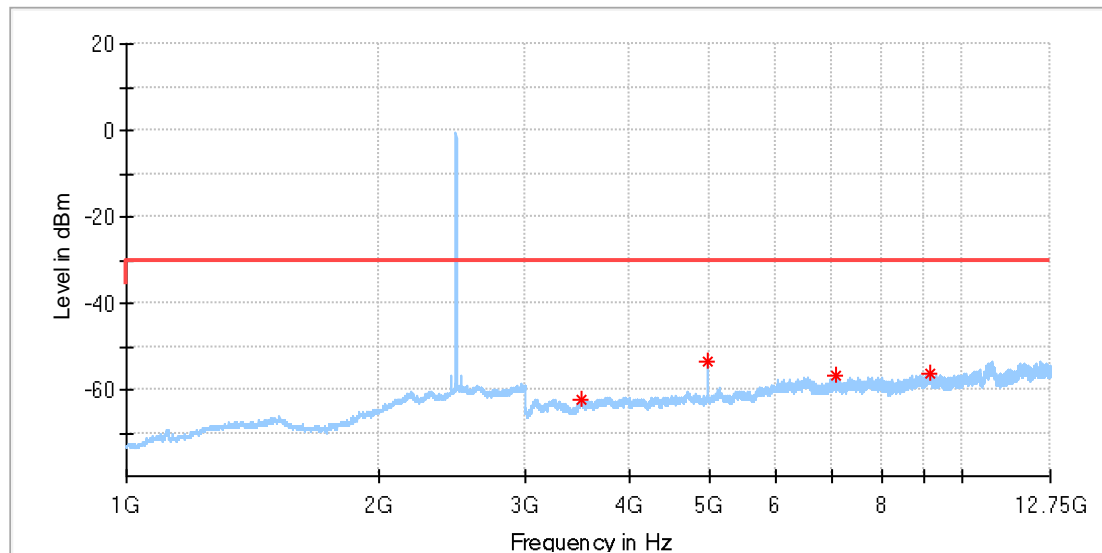


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3192.500000	-57.49	-30.00	27.49	150.0	V	9.0	-94.7
4804.000000	-51.66	-30.00	21.66	150.0	V	177.0	-93.2
6360.642857	-55.92	-30.00	25.92	150.0	V	352.0	-89.7
7980.642857	-54.72	-30.00	24.72	150.0	V	320.0	-88.7

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: TX_BLE H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

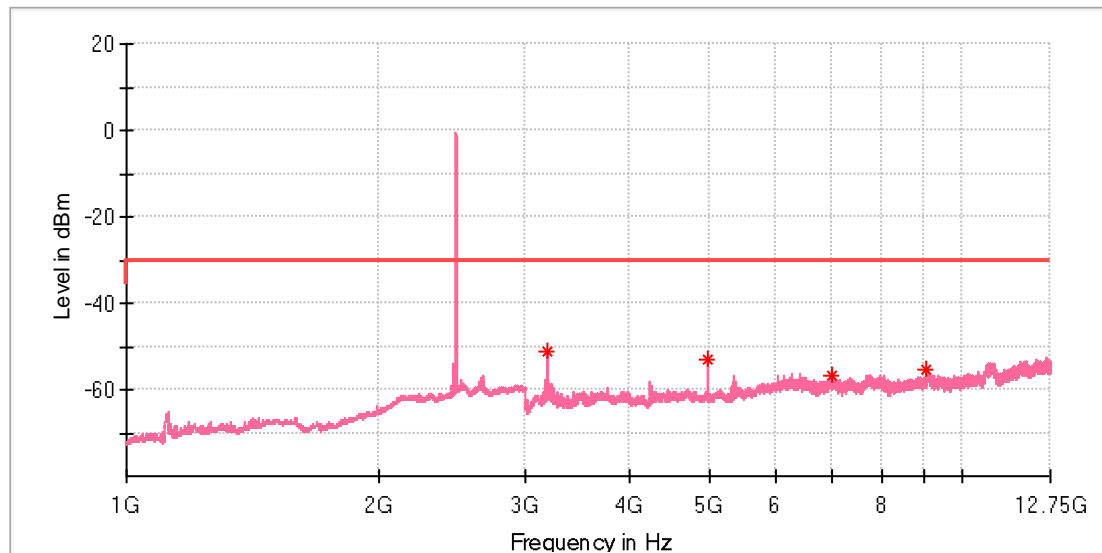


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3502.500000	-62.20	-30.00	32.20	150.0	H	92.0	-95.0
4959.500000	-53.49	-30.00	23.49	150.0	H	266.0	-93.0
7077.107143	-56.74	-30.00	26.74	150.0	H	255.0	-88.4
9144.535714	-56.07	-30.00	26.07	150.0	H	222.0	-87.6

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: TX_BLE H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin



Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3194.000000	-51.02	-30.00	21.02	150.0	V	164.0	-94.7
4960.000000	-53.07	-30.00	23.07	150.0	V	159.0	-93.0
7003.339286	-56.86	-30.00	26.86	150.0	V	130.0	-89.0
9070.767857	-55.57	-30.00	25.57	150.0	V	93.0	-87.5

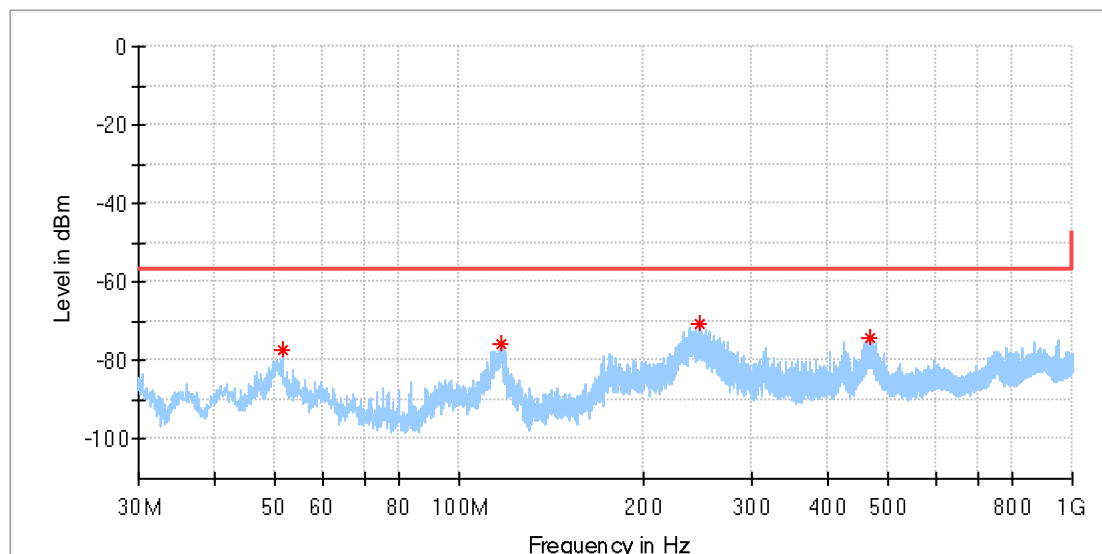
Appendix A.5: Test Results of Receiver Spurious Emissions

Note: 1. Testing was carried out within frequency range 25 MHz to the tenth harmonics. The measurement results below 30MHz and above 12.75GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 12.75GHz were reported. 2. This testing was carried out on different modulations, but only the worst case was presented in this report.

Below 1GHz

EUT Information

EUT Name:	Smart Lock U400
Model:	DL-D06E
Sample No:	A003967556-005
Test Mode:	RX_BLE L CH
Test Voltage:	Battery
Remark:	Temp:23.4;Humi:50%
Test standard:	EN 300328
Tested By:	Lich Chen
Reviewed by	Terry Yin

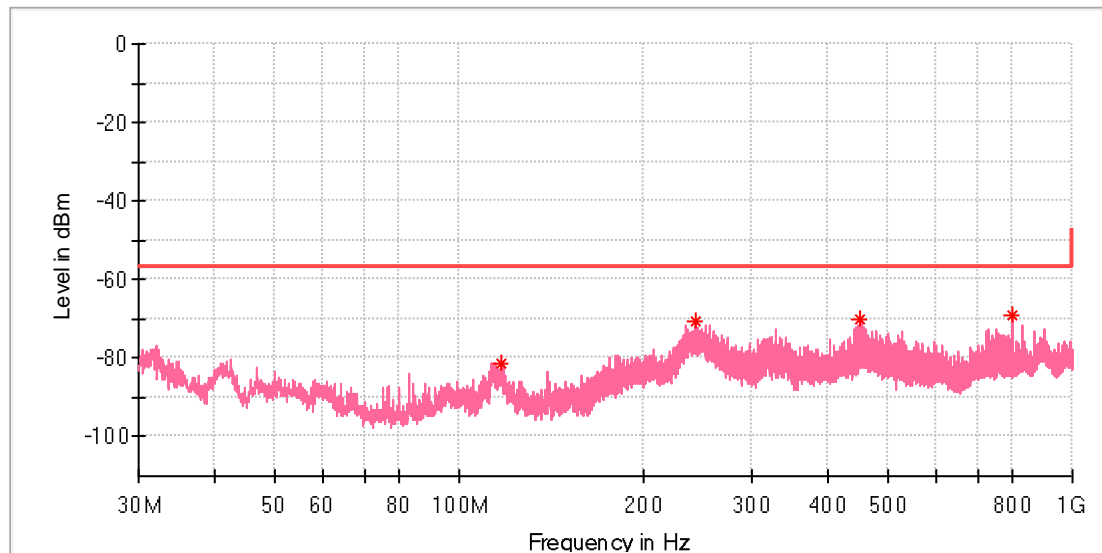


Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.485500	-77.07	-57.00	20.07	150.0	H	108.0	-121.4
117.397000	-75.66	-57.00	18.66	150.0	H	315.0	-122.6
245.825000	-70.62	-57.00	13.62	150.0	H	163.0	-117.3
468.149000	-74.04	-57.00	17.04	150.0	H	40.0	-110.6

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: RX_BLE L CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

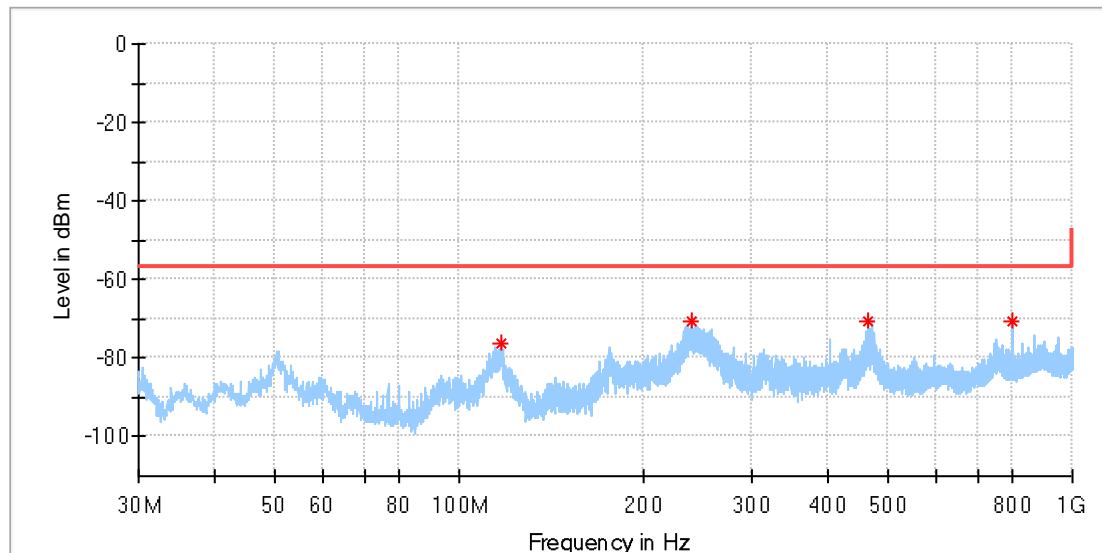


Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
117.154500	-81.20	-57.00	24.20	150.0	V	241.0	-121.2
242.575500	-70.51	-57.00	13.51	150.0	V	0.0	-117.5
450.543500	-70.11	-57.00	13.11	150.0	V	187.0	-113.9
796.882000	-69.03	-57.00	12.03	150.0	V	180.0	-107.0

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: RX_BLE H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

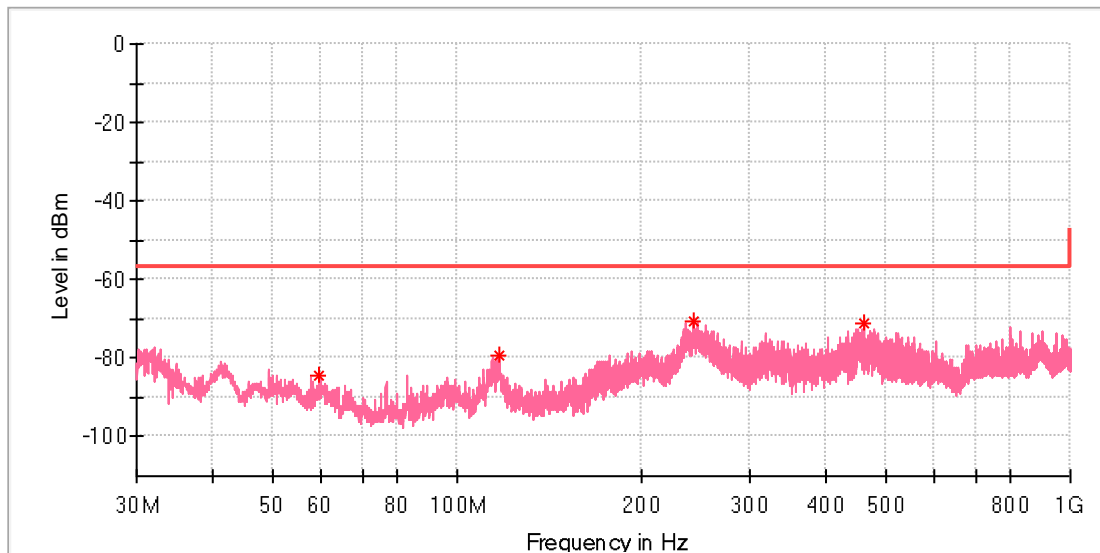


Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
117.397000	-76.40	-57.00	19.40	150.0	H	316.0	-122.6
240.005000	-70.82	-57.00	13.82	150.0	H	300.0	-117.2
465.530000	-70.35	-57.00	13.35	150.0	H	93.0	-110.8
799.307000	-70.58	-57.00	13.58	150.0	H	270.0	-108.5

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: RX_BLE H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin



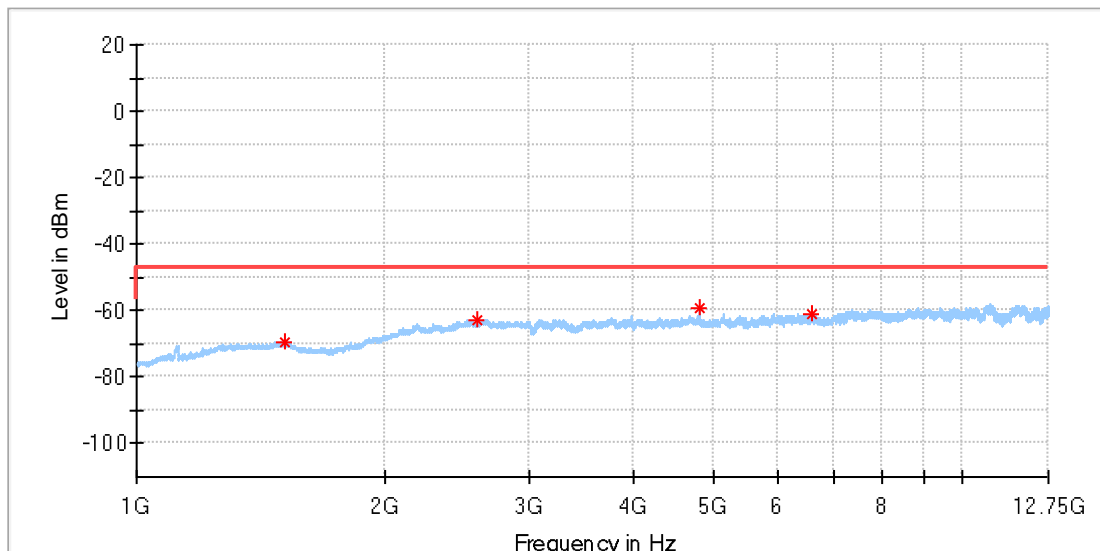
Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
59.391000	-84.27	-57.00	27.27	150.0	V	25.0	-119.5
116.815000	-79.05	-57.00	22.05	150.0	V	210.0	-121.2
242.624000	-70.74	-57.00	13.74	150.0	V	359.0	-117.5
459.370500	-70.90	-57.00	13.90	150.0	V	206.0	-113.5

Above 1GHz

EUT Information

EUT Name:	Smart Lock U400
Model:	DL-D06E
Sample No:	A003967556-005
Test Mode:	RX_BLE L CH
Test Voltage:	Battery
Remark:	Temp:23.4;Humi:50%
Test standard:	EN 300328
Tested By:	Lich Chen
Reviewed by	Terry Yin

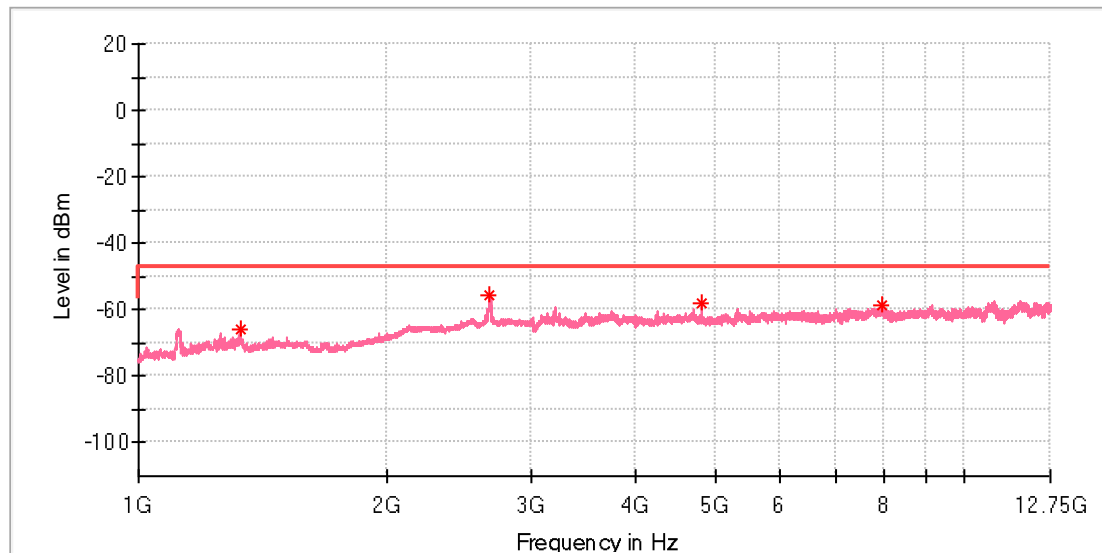


Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1512.000000	-69.66	-47.00	22.66	150.0	H	339.0	-98.6
2595.500000	-62.62	-47.00	15.62	150.0	H	226.0	-92.7
4804.833333	-59.07	-47.00	12.07	150.0	H	261.0	-92.9
6570.666667	-60.96	-47.00	13.96	150.0	H	1.0	-88.9

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: RX_BLE L CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

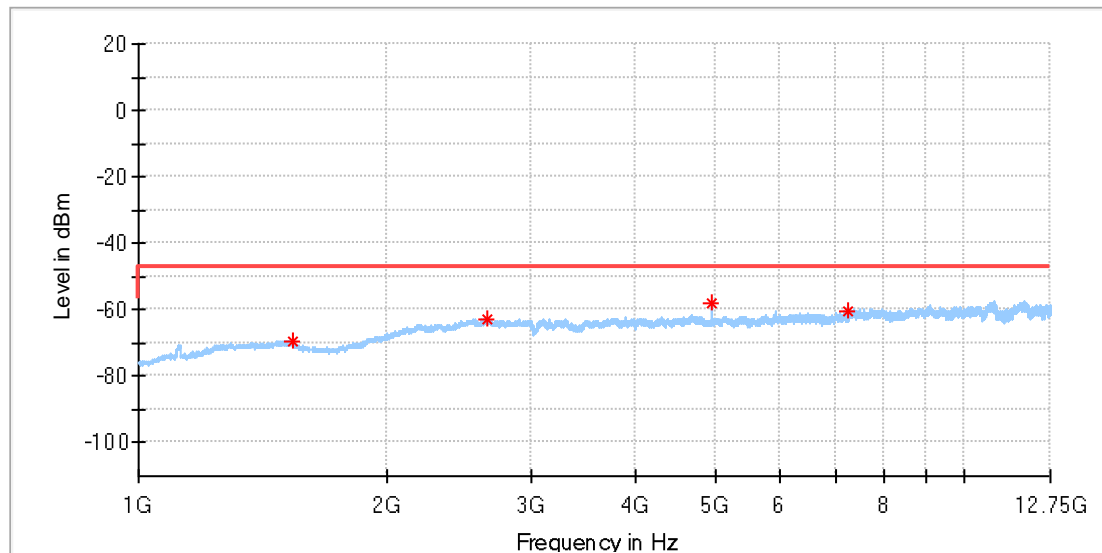


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1329.500000	-65.98	-47.00	18.98	150.0	V	204.0	-101.1
2657.500000	-55.58	-47.00	8.58	150.0	V	132.0	-91.8
4805.375000	-57.82	-47.00	10.82	150.0	V	82.0	-93.2
7968.166667	-58.86	-47.00	11.86	150.0	V	97.0	-88.6

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: RX_BLE H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

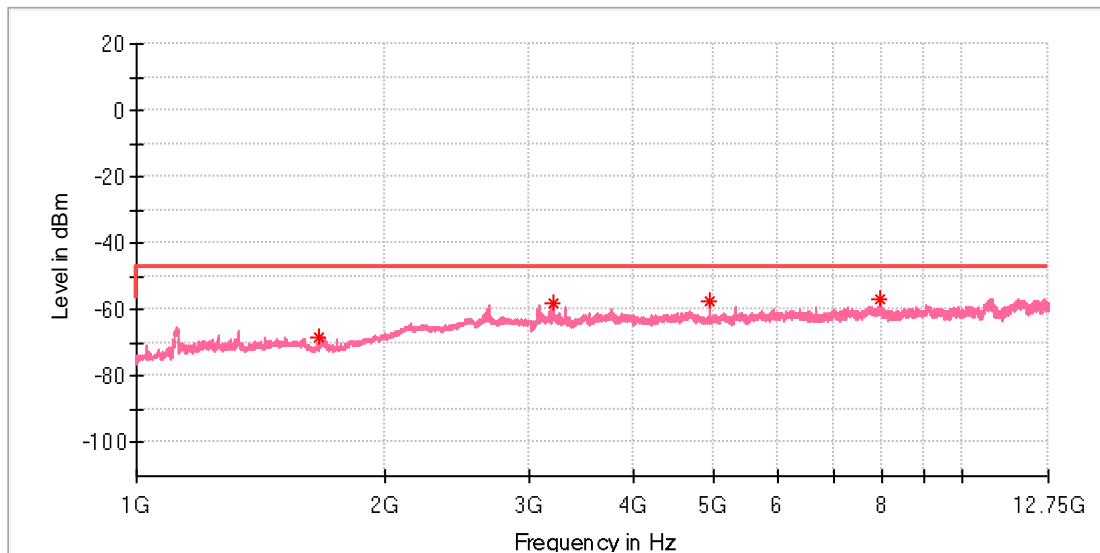


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1542.000000	-69.40	-47.00	22.40	150.0	H	343.0	-98.7
2645.500000	-62.71	-47.00	15.71	150.0	H	106.0	-91.9
4960.833333	-57.87	-47.00	10.87	150.0	H	262.0	-93.0
7230.416667	-60.17	-47.00	13.17	150.0	H	242.0	-89.1

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: RX_BLE H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin



Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1665.500000	-68.46	-47.00	21.46	150.0	V	200.0	-98.7
3198.791667	-58.30	-47.00	11.30	150.0	V	354.0	-94.6
4961.375000	-57.39	-47.00	10.39	150.0	V	275.0	-93.0
7969.250000	-56.64	-47.00	9.64	150.0	V	0.0	-88.6

Appendix A.6: Test Results of Receiver Blocking

Bluetooth LE, 1Mbps

Receiver category 2: 0dBm (e.i.r.p) < Max. RF output Power ≤ 10 dBm (e.i.r.p)					
Test Channel (MHz)	Measured OCBW (Hz)	Measured Wanted Signal Mean Power (dBm)	Category 2 (dBm)	Antenna Gain (dBi)	Wanted Signal Mean Power (dBm)
2405.00	1025000.00	-68.89	-64.00	1.00	-68.89
2480.00	1025000.00	-68.89	-64.00	1.00	-68.89
Note: 1. $(-139 \text{ dBm} + 10 \times \log_{10}(\text{OCBW}) + 10 \text{ dB})$ or $(-74 \text{ dBm} + 10 \text{ dB})$ whichever is less					

Wanted Signal Mean Power from Companion Device (dBm)	Test Channel (MHz)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm)	Type of Blocking Signal	PER	Results
-67.89	2405.00	2380.00	-33.00	CW	5.40%	Pass
-67.89	2480.00	2504.00			1.80%	Pass
-67.89	2405.00	2300.00			2.30%	Pass
-67.89	2480.00	2584.00			0.80%	Pass

Appendix B: Test Results of Thread

APPENDIX B: TEST RESULTS OF THREAD	1
APPENDIX B.1: TEST RESULTS OF POWER SPECTRAL DENSITY	2
APPENDIX B.2: TEST RESULTS OF OCCUPIED CHANNEL BANDWIDTH	5
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Appendix B.1: Test Results of Power Spectral Density

Power Spectral Density (2405 MHz; 10.000 dBm; 5 MHz)

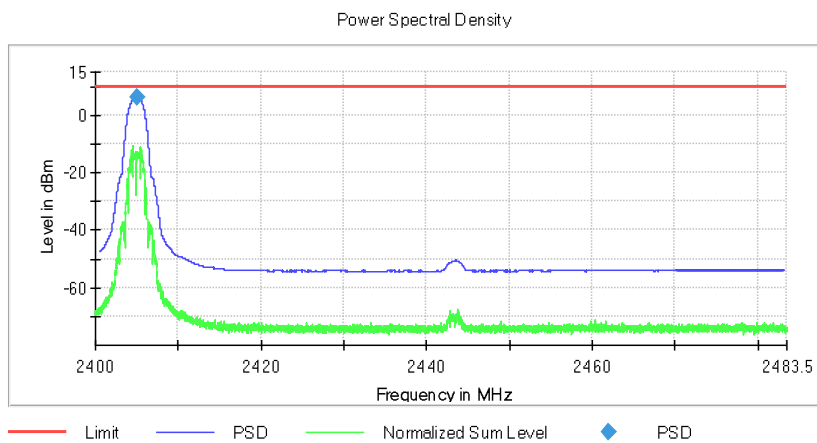
Definition: The Power Spectral Density is the mean equivalent isotropically radiated power (e.i.r.p.) spectral density in a 1 MHz bandwidth during a transmission burst.

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2405.000000	2404.974404	6.124	10.0	PASS

Ports

Port	State
1	used



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	8351	~ 8351
SweepTime	20.000 s	20.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	2	2
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Power Spectral Density (2445 MHz; 10.000 dBm; 5 MHz)

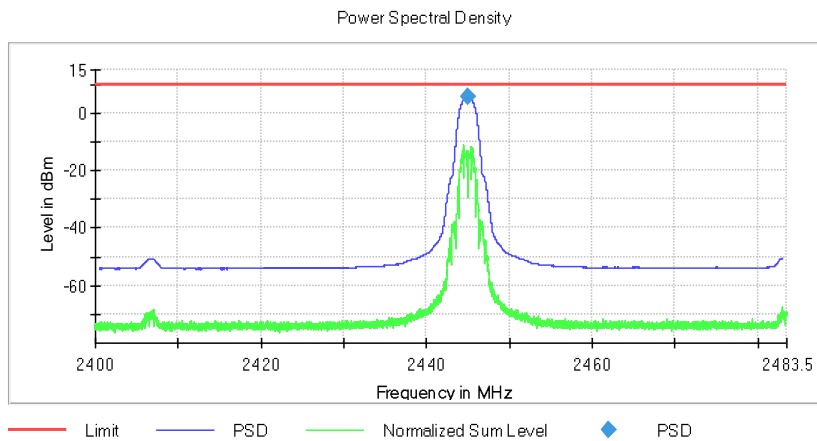
Definition: The Power Spectral Density is the mean equivalent isotropically radiated power (e.i.r.p.) spectral density in a 1 MHz bandwidth during a transmission burst.

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2445.000000	2444.979613	5.591	10.0	PASS

Ports

Port	State
1	used



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	8351	~ 8351
SweepTime	20.000 s	20.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	2	2
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Power Spectral Density (2480 MHz; 10.000 dBm; 5 MHz)

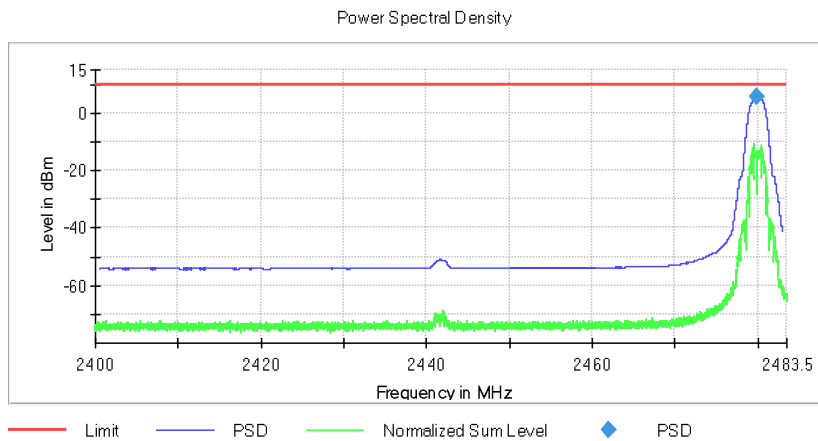
Definition: The Power Spectral Density is the mean equivalent isotropically radiated power (e.i.r.p.) spectral density in a 1 MHz bandwidth during a transmission burst.

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2479.975422	5.794	10.0	PASS

Ports

Port	State
1	used



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	8351	~ 8351
SweepTime	20.000 s	20.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	2	2
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Appendix B.2: Test Results of Occupied Channel Bandwidth

Occupied Channel Bandwidth (2405 MHz; 10.000 dBm; 5 MHz)

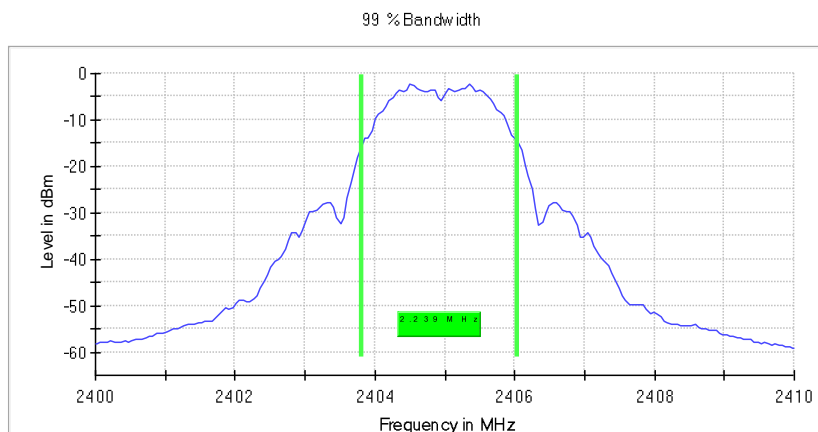
Definition: The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Limit Min BE L (MHz)
2405.000000	2.238806	---	---	2403.805970	2400.000000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Band Edge Right (MHz)	Limit Max BE R (MHz)	Result
2405.000000	2406.044776	2483.500000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.41000 GHz	2.41000 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	>= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	201	~ 201
SweepTime	1.000 s	1.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.18 dB	0.50 dB

Occupied Channel Bandwidth (2445 MHz; 10.000 dBm; 5 MHz)

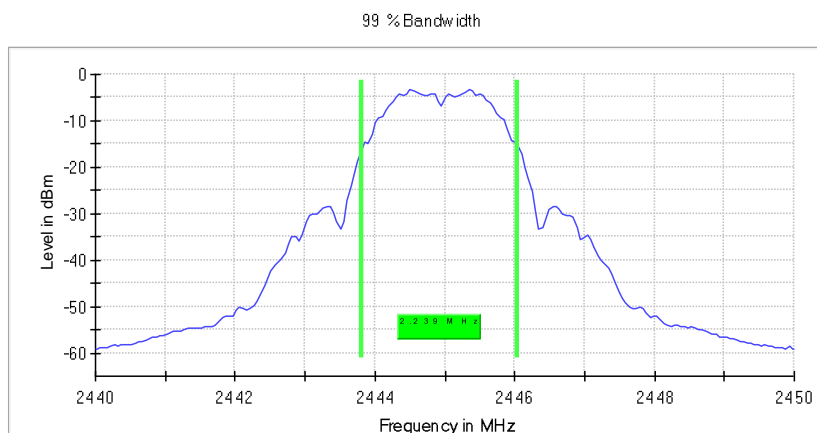
Definition: The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Limit Min BE L (MHz)
2445.000000	2.238806	---	---	2443.805970	2400.000000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Band Edge Right (MHz)	Limit Max BE R (MHz)	Result
2445.000000	2446.044776	2483.500000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.45000 GHz	2.45000 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	>= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	201	~ 201
Sweeptime	1.000 s	1.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.25 dB	0.50 dB

Occupied Channel Bandwidth (2480 MHz; 10.000 dBm; 5 MHz)

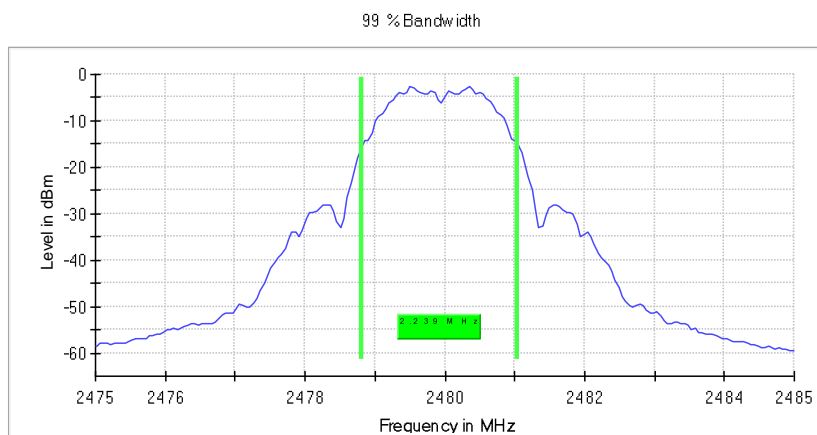
Definition: The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Limit Min BE L (MHz)
2480.000000	2.238806	---	---	2478.805970	2400.000000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Band Edge Right (MHz)	Limit Max BE R (MHz)	Result
2480.000000	2481.044776	2483.500000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47500 GHz	2.47500 GHz
Stop Frequency	2.48500 GHz	2.48500 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	>= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	201	~ 201
Sweptime	1.000 s	1.000 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.09 dB	0.50 dB

Appendix B.3: Test Results of Transmitter Unwanted Emissions in the Out-of-band Domain

Tx unwanted emissions in the out-of-band domain (2405 MHz; 10.000 dBm; 5 MHz)

Transmitter unwanted emissions in the out-of-band domain are emissions when the equipment is in Transmit mode, on frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions.

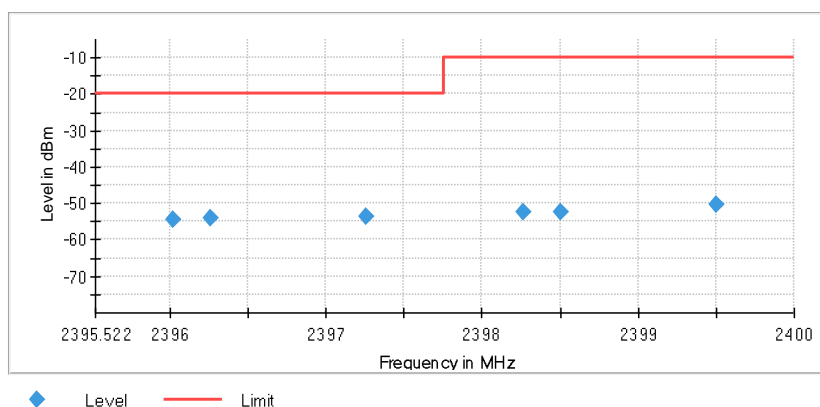
Summary

DUT Frequency (MHz)	FAIL	PASS	Result
2405.000000	0	12	PASS

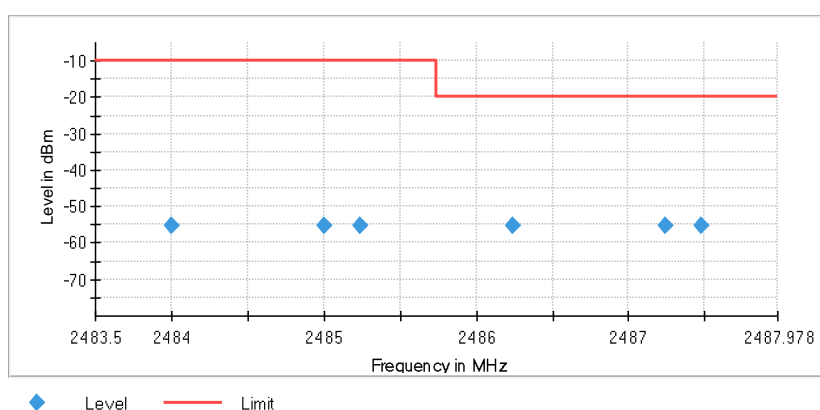
Measurements

Frequency (MHz)	level (dBm)	Limit (dBm)	Result
2396.022388	-54.3	-20.0	PASS
2396.261194	-54.2	-20.0	PASS
2397.261194	-53.6	-20.0	PASS
2398.261194	-52.4	-10.0	PASS
2398.500000	-52.2	-10.0	PASS
2399.500000	-50.3	-10.0	PASS
2484.000000	-55.4	-10.0	PASS
2485.000000	-55.5	-10.0	PASS
2485.238806	-55.4	-10.0	PASS
2486.238806	-55.5	-20.0	PASS
2487.238806	-55.4	-20.0	PASS
2487.477612	-55.5	-20.0	PASS

Out of band low



Out of band high



Tx unwanted emissions in the out-of-band domain (2480 MHz; 10.000 dBm; 5 MHz)

Transmitter unwanted emissions in the out-of-band domain are emissions when the equipment is in Transmit mode, on frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions.

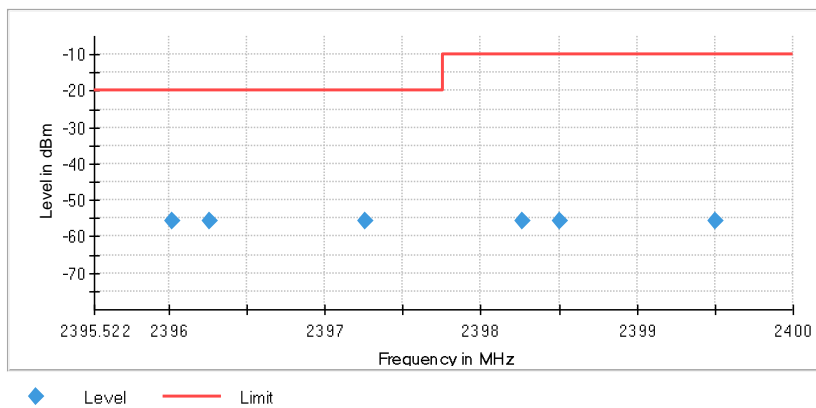
Summary

DUT Frequency (MHz)	FAIL	PASS	Result
2480.000000	0	12	PASS

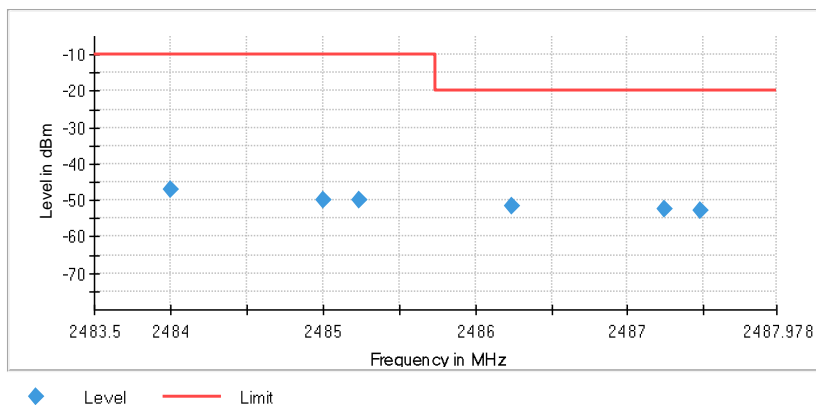
Measurements

Frequency (MHz)	level (dBm)	Limit (dBm)	Result
2396.022388	-55.8	-20.0	PASS
2396.261194	-55.9	-20.0	PASS
2397.261194	-55.9	-20.0	PASS
2398.261194	-55.8	-10.0	PASS
2398.500000	-55.8	-10.0	PASS
2399.500000	-55.8	-10.0	PASS
2484.000000	-47.1	-10.0	PASS
2485.000000	-49.8	-10.0	PASS
2485.238806	-50.1	-10.0	PASS
2486.238806	-51.7	-20.0	PASS
2487.238806	-52.5	-20.0	PASS
2487.477612	-52.9	-20.0	PASS

Out of band low



Out of band high



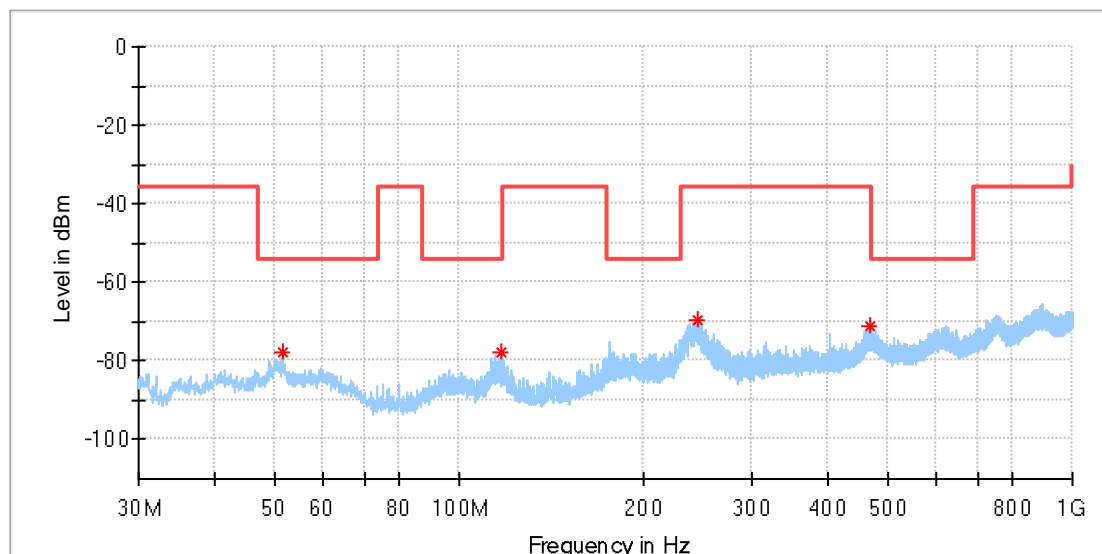
Appendix B.4: Test Results of Transmitter Unwanted Emissions in the Spurious Domain

Note: 1. Testing was carried out within frequency range 25 MHz to the tenth harmonics. The measurement results below 30MHz and above 12.75GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 12.75GHz were reported.

Below 1GHz

EUT Information

EUT Name:	Smart Lock U400
Model:	DL-D06E
Sample No:	A003967556-005
Test Mode:	TX_Thread L CH
Test Voltage:	Battery
Remark:	Temp:23.4;Humi:50%
Test standard:	EN 300328
Tested By:	Lich Chen
Reviewed by	Terry Yin

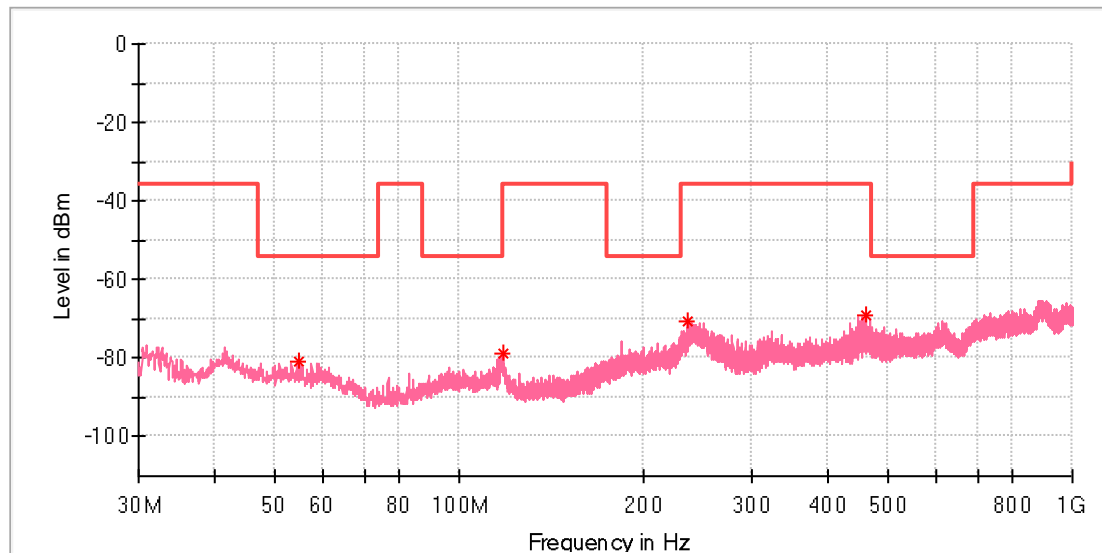


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.437000	-77.91	-54.00	23.91	150.0	H	353.0	-121.4
116.960500	-77.94	-54.00	23.94	150.0	H	326.0	-122.6
244.273000	-69.36	-36.00	33.36	150.0	H	122.0	-117.2
468.246000	-71.14	-36.00	35.14	150.0	H	314.0	-110.6

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: TX_Thread L CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

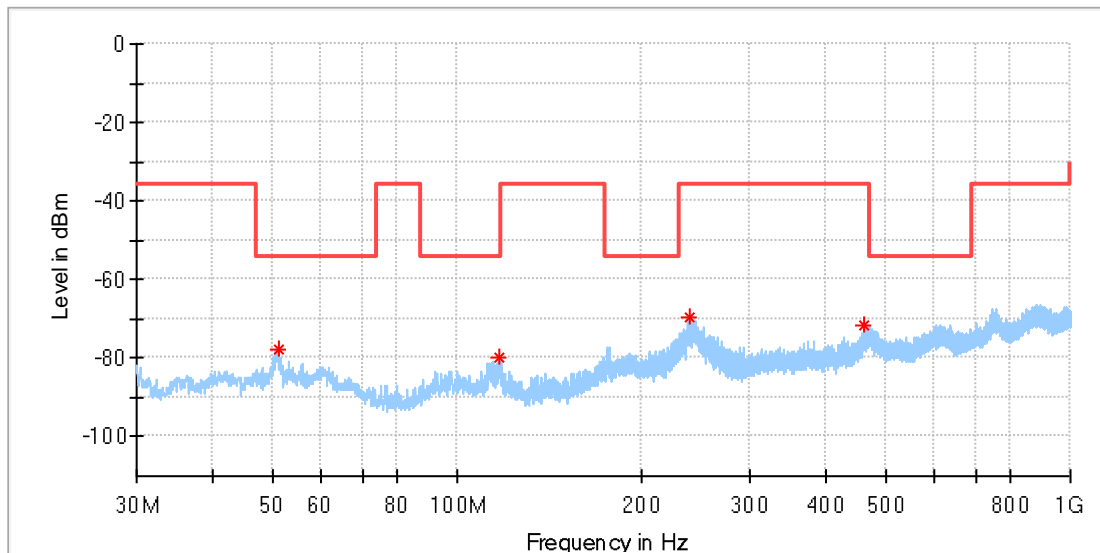


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
54.589500	-80.91	-54.00	26.91	150.0	V	46.0	-119.1
117.930500	-78.68	-54.00	24.68	150.0	V	198.0	-121.2
236.561500	-70.70	-36.00	34.70	150.0	V	113.0	-117.8
460.195000	-69.06	-36.00	33.06	150.0	V	198.0	-113.4

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: TX_Thread H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

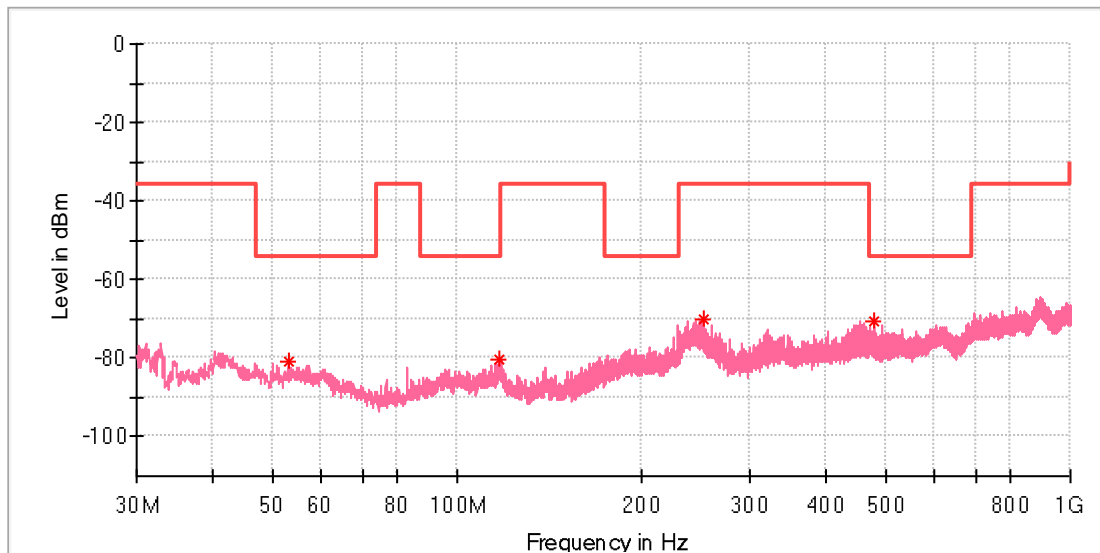


Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.000500	-77.63	-54.00	23.63	150.0	H	118.0	-121.5
117.203000	-80.01	-54.00	26.01	150.0	H	124.0	-122.5
239.083500	-69.54	-36.00	33.54	150.0	H	324.0	-117.2
460.292000	-71.58	-36.00	35.58	150.0	H	230.0	-111.2

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: TX_Thread H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin



Critical Freqs

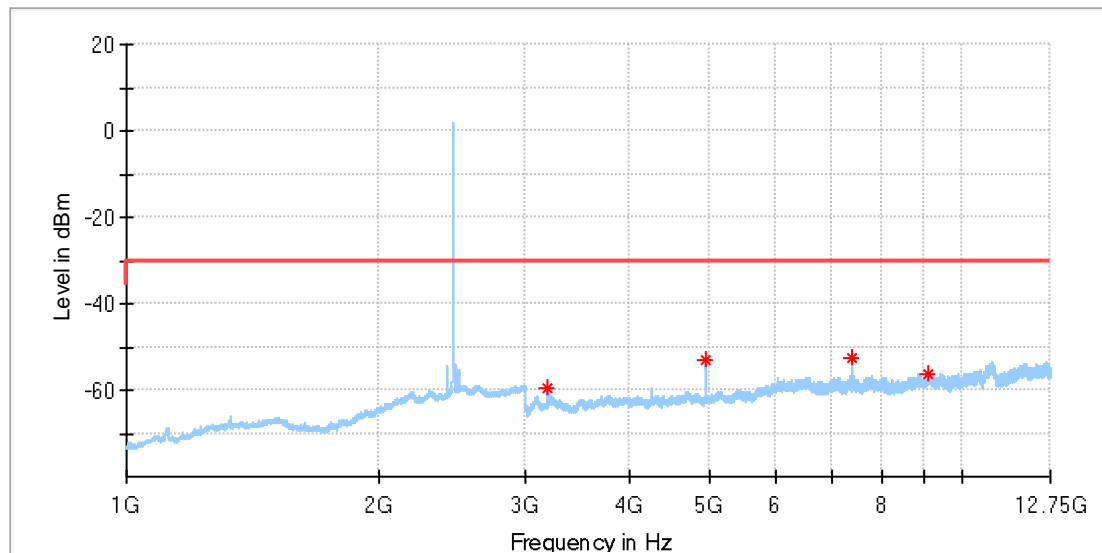
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
53.037500	-81.01	-54.00	27.01	150.0	V	343.0	-119.1
116.960500	-80.26	-54.00	26.26	150.0	V	186.0	-121.2
251.984500	-69.95	-36.00	33.95	150.0	V	49.0	-117.7
478.285500	-70.46	-54.00	16.46	150.0	V	178.0	-113.6

Above 1GHz

Note: The highest waveform in the figure is Thread Fundamental.

EUT Information

EUT Name:	Smart Lock U400
Model:	DL-D06E
Sample No:	A003967556-005
Test Mode:	TX_Thread L CH
Test Voltage:	Battery
Remark:	Temp:23.4;Humi:50%
Test standard:	EN 300328
Tested By:	Lich Chen
Reviewed by	Terry Yin

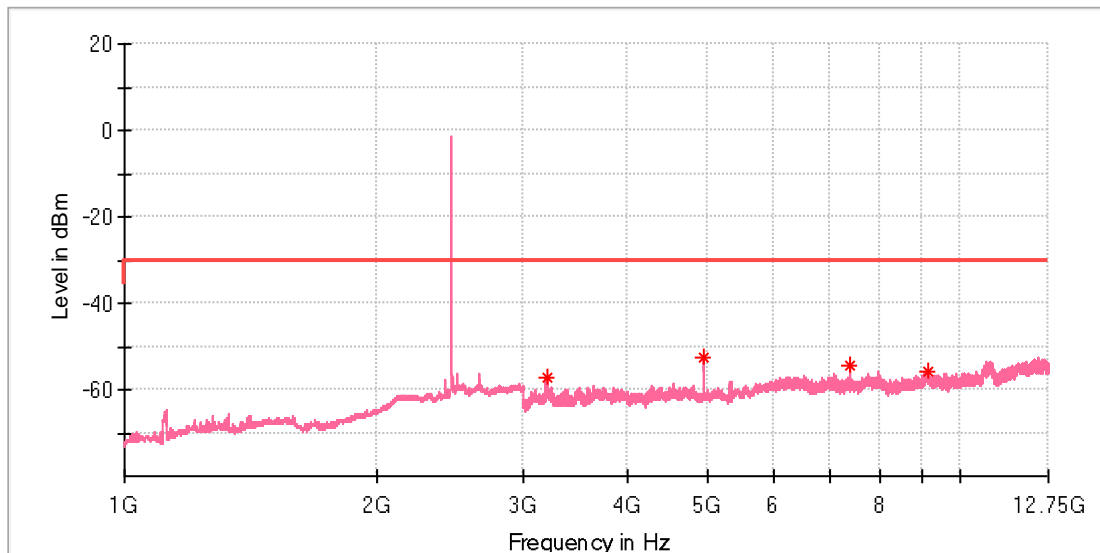


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3187.000000	-59.46	-30.00	29.46	150.0	H	84.0	-95.4
4923.000000	-52.89	-30.00	22.89	150.0	H	98.0	-93.3
7381.339286	-52.60	-30.00	22.60	150.0	H	59.0	-88.3
9095.839286	-56.11	-30.00	26.11	150.0	H	0.0	-87.3

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: TX_Thread L CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

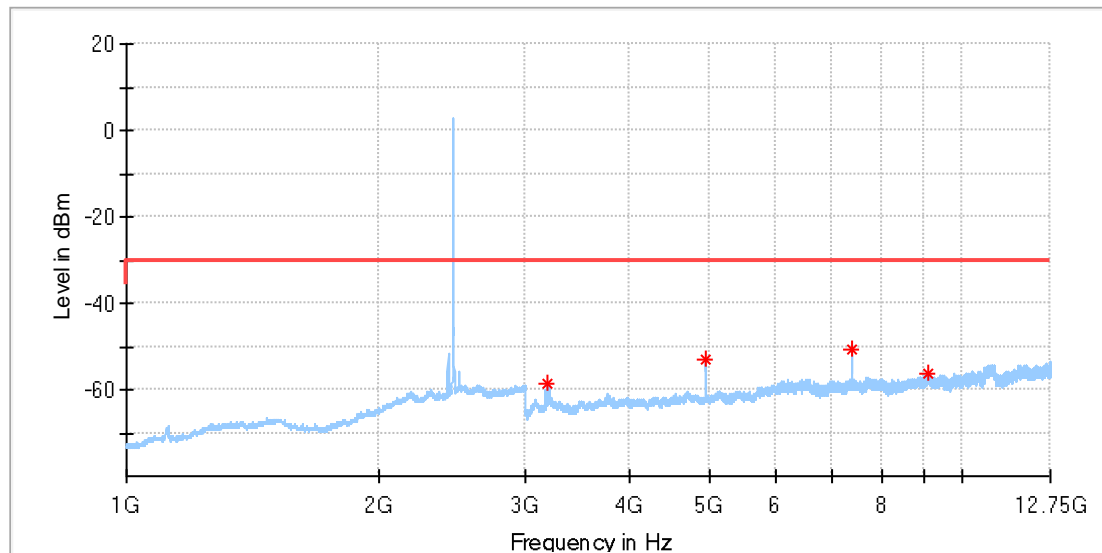


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3200.000000	-57.22	-30.00	27.22	150.0	V	160.0	-94.5
4923.000000	-52.63	-30.00	22.63	150.0	V	152.0	-93.1
7384.232143	-54.65	-30.00	24.65	150.0	V	144.0	-88.6
9134.892857	-55.68	-30.00	25.68	150.0	V	231.0	-87.5

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: TX_Thread H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

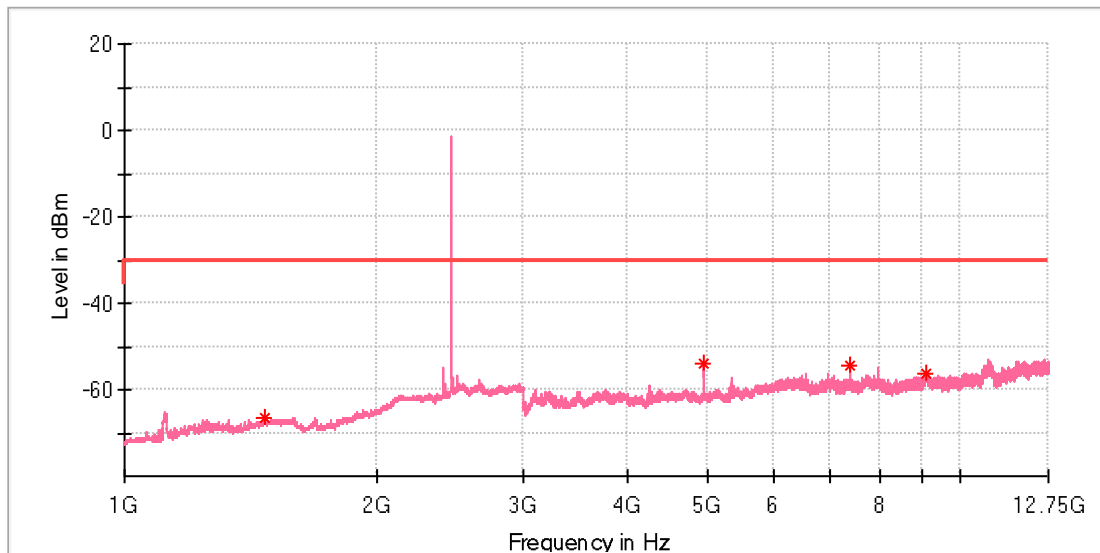


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3195.500000	-58.53	-30.00	28.53	150.0	H	247.0	-95.2
4923.000000	-52.81	-30.00	22.81	150.0	H	103.0	-93.3
7384.232143	-50.71	-30.00	20.71	150.0	H	55.0	-88.3
9107.892857	-56.28	-30.00	26.28	150.0	H	103.0	-87.2

EUT Information

EUT Name:	Smart Lock U400
Model:	DL-D06E
Sample No:	A003967556-005
Test Mode:	TX_Thread H CH
Test Voltage:	Battery
Remark:	Temp:23.4;Humi:50%
Test standard:	EN 300328
Tested By:	Lich Chen
Reviewed by	Terry Yin



Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1471.500000	-66.29	-30.00	36.29	150.0	V	0.0	-99.5
4921.000000	-53.75	-30.00	23.75	150.0	V	150.0	-93.1
7384.232143	-54.38	-30.00	24.38	150.0	V	246.0	-88.6
9081.857143	-56.10	-30.00	26.10	150.0	V	0.0	-87.4

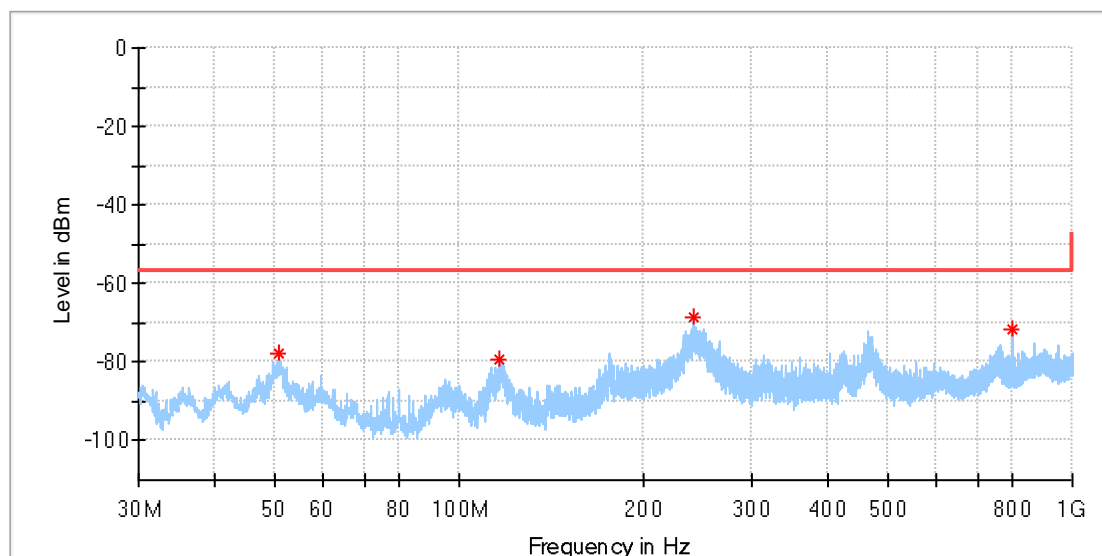
Appendix B.5: Test Results of Receiver Spurious Emissions

Note: 1. Testing was carried out within frequency range 25 MHz to the tenth harmonics. The measurement results below 30MHz and above 12.75GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 12.75GHz were reported.

Below 1GHz

EUT Information

EUT Name:	Smart Lock U400
Model:	DL-D06E
Sample No:	A003967556-005
Test Mode:	RX_Thread L CH
Test Voltage:	Battery
Remark:	Temp:23.4;Humi:50%
Test standard:	EN 300328
Tested By:	Lich Chen
Reviewed by	Terry Yin

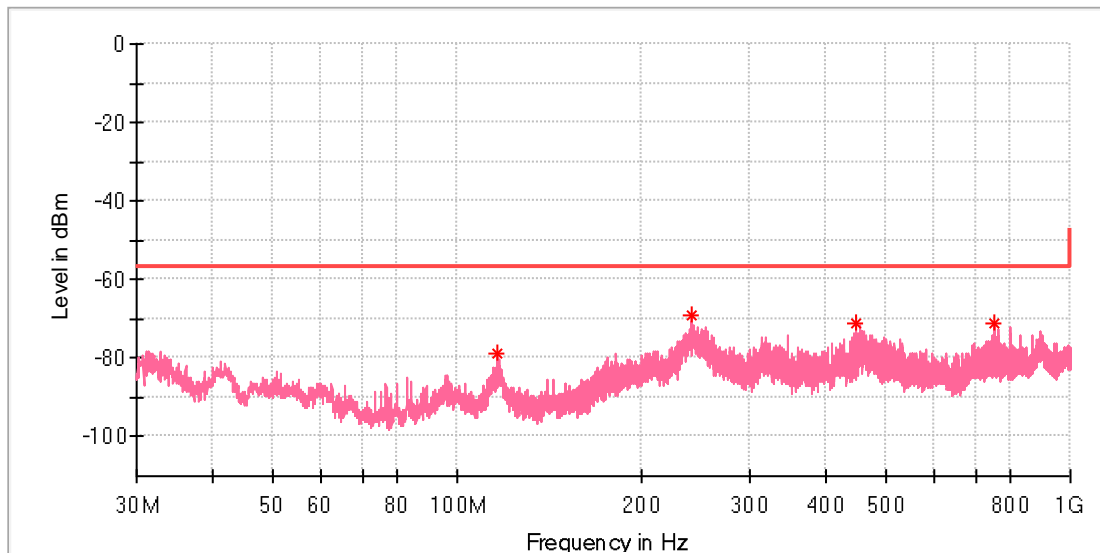


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
50.709500	-77.78	-57.00	20.78	150.0	H	128.0	-121.6
116.669500	-79.49	-57.00	22.49	150.0	H	315.0	-122.6
242.042000	-68.54	-57.00	11.54	150.0	H	311.0	-117.2
798.725000	-71.73	-57.00	14.73	150.0	H	265.0	-108.5

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: RX_Thread L CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

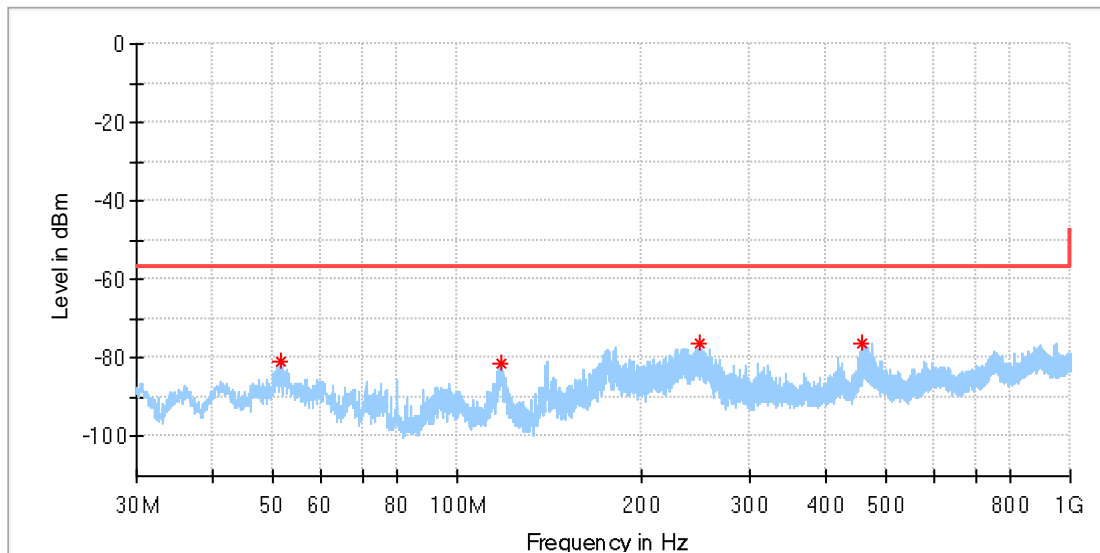


Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
116.524000	-78.95	-57.00	21.95	150.0	V	180.0	-121.2
240.393000	-69.09	-57.00	12.09	150.0	V	90.0	-117.5
447.391000	-71.09	-57.00	14.09	150.0	V	202.0	-114.1
752.165000	-71.07	-57.00	14.07	150.0	V	194.0	-107.2

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: RX_Thread H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

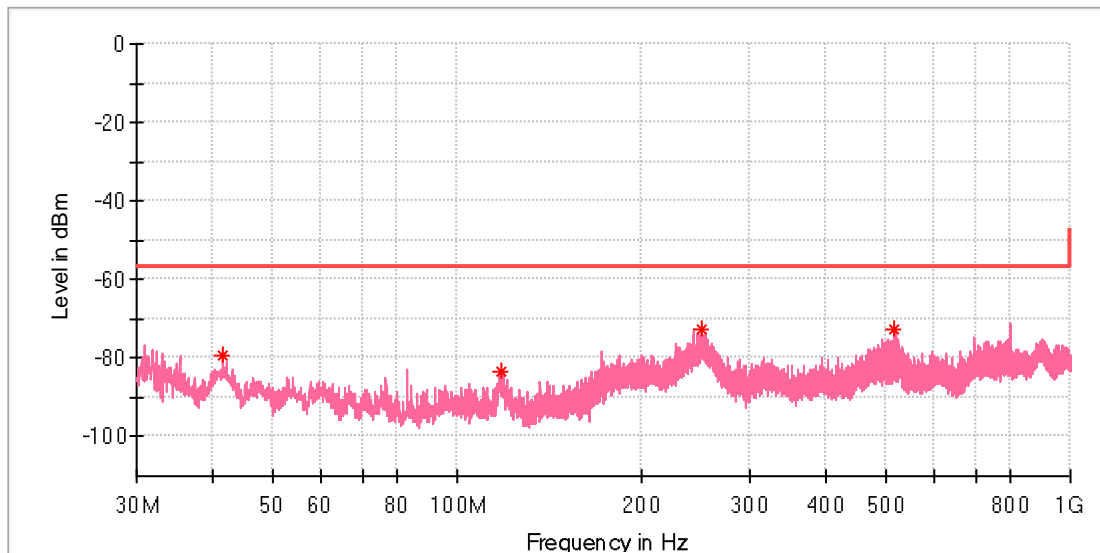


Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
51.485500	-80.81	-57.00	23.81	150.0	H	292.0	-121.4
117.833500	-81.29	-57.00	24.29	150.0	H	148.0	-122.6
248.395500	-76.13	-57.00	19.13	150.0	H	73.0	-117.5
458.788500	-76.04	-57.00	19.04	150.0	H	185.0	-111.4

EUT Information

EUT Name:	Smart Lock U400
Model:	DL-D06E
Sample No:	A003967556-005
Test Mode:	RX_Thread H CH
Test Voltage:	Battery
Remark:	Temp:23.4;Humi:50%
Test standard:	EN 300328
Tested By:	Lich Chen
Reviewed by	Terry Yin



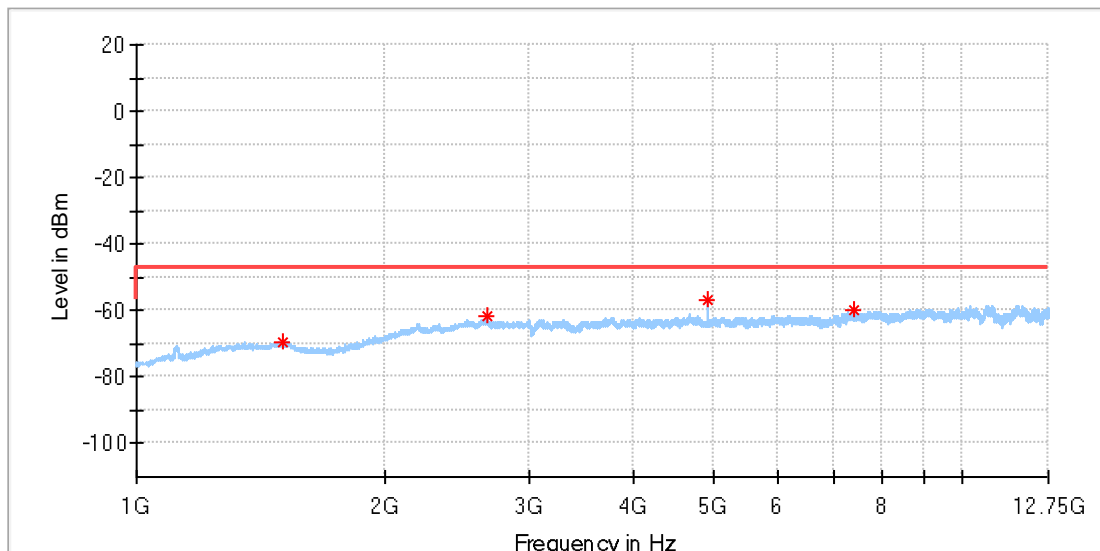
Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
41.446000	-79.40	-57.00	22.40	150.0	V	0.0	-116.3
117.736500	-83.32	-57.00	26.32	150.0	V	179.0	-121.2
249.753500	-72.58	-57.00	15.58	150.0	V	33.0	-117.5
514.903000	-72.90	-57.00	15.90	150.0	V	194.0	-113.2

Above 1GHz

EUT Information

EUT Name:	Smart Lock U400
Model:	DL-D06E
Sample No:	A003967556-005
Test Mode:	RX_Thread L CH
Test Voltage:	Battery
Remark:	Temp:23.4;Humi:50%
Test standard:	EN 300328
Tested By:	Lich Chen
Reviewed by	Terry Yin

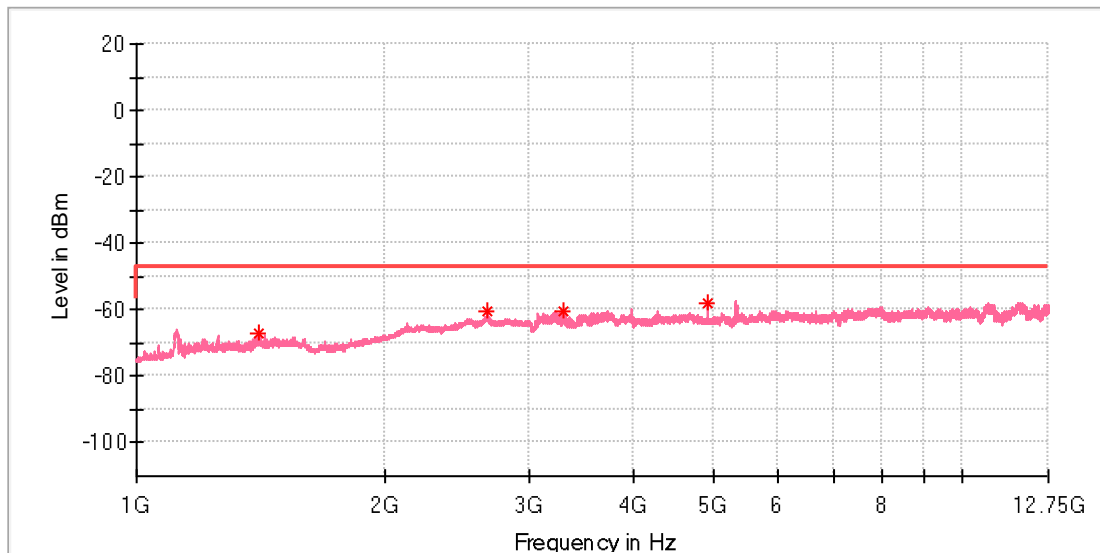


Critical Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1505.000000	-69.48	-47.00	22.48	150.0	H	274.0	-98.8
2663.000000	-61.84	-47.00	14.84	150.0	H	216.0	-92.2
4924.000000	-56.97	-47.00	9.97	150.0	H	264.0	-93.2
7428.125000	-59.98	-47.00	12.98	150.0	H	130.0	-88.6

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: RX_Thread L CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

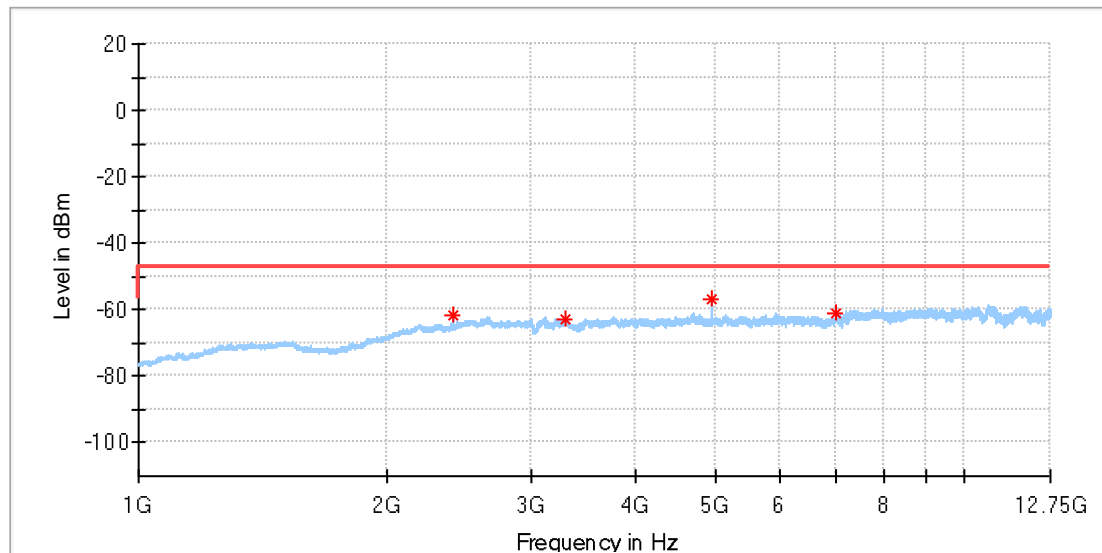


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1408.500000	-67.34	-47.00	20.34	150.0	V	159.0	-100.2
2661.500000	-60.17	-47.00	13.17	150.0	V	326.0	-91.8
3299.541667	-60.46	-47.00	13.46	150.0	V	158.0	-95.9
4924.000000	-58.27	-47.00	11.27	150.0	V	94.0	-93.1

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: RX_Thread H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin

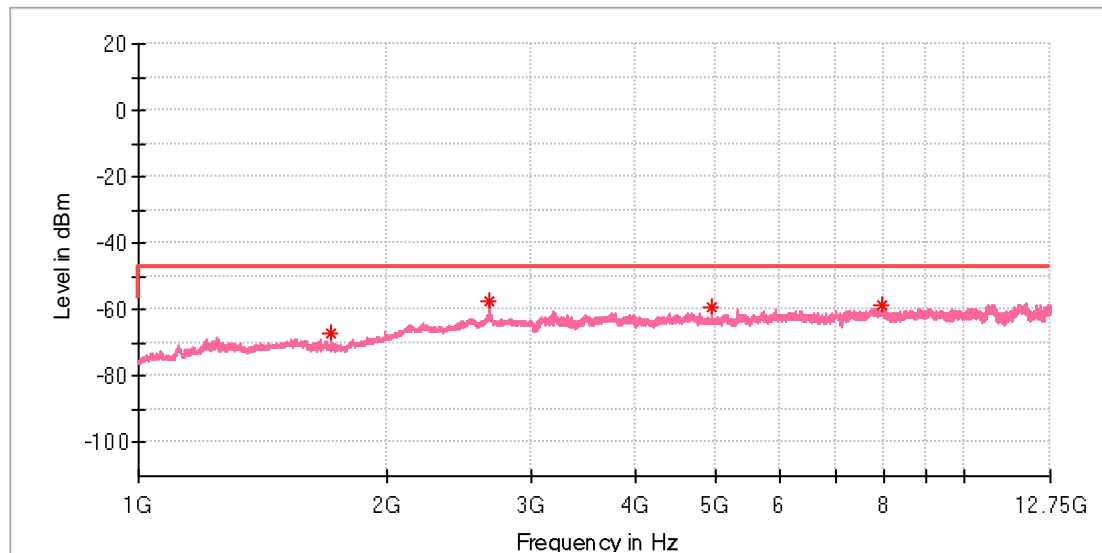


Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2401.500000	-61.42	-47.00	14.42	150.0	H	284.0	-93.8
3297.916667	-62.68	-47.00	15.68	150.0	H	206.0	-95.3
4962.458333	-56.63	-47.00	9.63	150.0	H	255.0	-93.0
7004.541667	-61.00	-47.00	14.00	150.0	H	347.0	-89.2

EUT Information

EUT Name: Smart Lock U400
Model: DL-D06E
Sample No: A003967556-005
Test Mode: RX_Thread H CH
Test Voltage: Battery
Remark: Temp:23.4;Humi:50%
Test standard: EN 300328
Tested By: Lich Chen
Reviewed by: Terry Yin



Critical_Freqs

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1709.000000	-67.34	-47.00	20.34	150.0	V	190.0	-98.1
2666.000000	-57.26	-47.00	10.26	150.0	V	320.0	-91.7
4962.458333	-59.28	-47.00	12.28	150.0	V	272.0	-93.0
7955.708333	-58.46	-47.00	11.46	150.0	V	0.0	-88.5

Appendix B.6: Test Results of Receiver Blocking

Receiver category 2: 0dBm (e.i.r.p) < Max. RF output Power ≤ 10 dBm (e.i.r.p)					
Test Channel (MHz)	Measured OCBW (Hz)	Measured Wanted Signal Mean Power (dBm)	Category 2 (dBm)	Antenna Gain (dBi)	Wanted Signal Mean Power (dBm)
2405.00	2239000.00	-65.50	-64.00	1.00	-65.50
2480.00	2239000.00	-65.50	-64.00	1.00	-65.50

Note: 1. $(-139 \text{ dBm} + 10 \times \log_{10}(\text{OCBW}) + 10 \text{ dB})$ or $(-74 \text{ dBm} + 10 \text{ dB})$ whichever is less

Wanted Signal Mean Power from Companion Device (dBm)	Test Channel (MHz)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm)	Type of Blocking Signal	PER	Results
-64.50	2405.00	2380.00	-33.00	CW	3.60%	Pass
-64.50	2480.00	2504.00			4.00%	Pass
-64.50	2405.00	2300.00			2.90%	Pass
-64.50	2480.00	2584.00			3.50%	Pass